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AN ADDRESS DELIVERED BEFORE THE MASSACHUSETTS AGRICULTURAL SOCIETY AT THE BRIGHTON CATTLE SHOW, OCTOBER 17, 1820. BY R. SULLIVAN.

An eminent writer has said that *a farmer may be crushed by the weight of his own riches.* The meaning of the author is exemplified, in the disproportion of so many of our farms to the capital of the cultivator and to the number of his labourers. In surveying the agricultural districts of our commonwealth, we look in vain for the evidence of that intelligence and enterprise which the world has been willing to ascribe to the character of New England men. Those of our countrymen, who are engaged in other pursuits, appear to have a higher claim to the distinction which these qualities bestow. Not that farmers are a meaner race of men, or that they are incapable of as great efforts as other classes of our citizens. But they have chosen to display the energy of their character in every thing rather than in the appropriate labours of husbandry. And when we are heard to boast of the intelligence of the community of farmers in Massachusetts, we are not to be understood, and we say it

with regret, as speaking of their proficiency in their professional art. They appear to shrink with diffidence from the task of a scientific and thorough cultivation.

The disproportionate size of our farms is an hereditary evil. And the errors and prejudices which have accompanied it, for several generations, are deep rooted. The injurious influence of these reaches to the leading and most obvious principles of good husbandry. How many of our farmers, to obtain a greater produce, prefer to extend their imperfect cultivation to a large surface rather than to cultivate a less surface well! In the former case less skill is required, and less perfection in the implements. How few think it important whether their kine be of an improved or of an ordinary breed! With their extensive pastures, it is thought, the dairy may be as cheaply supplied from a greater number of indifferent animals as from a smaller number of a better quality. Then, at the close of the season, the cattle are sometimes left to subsist on the old fog of the ample fields until the snow falls, and occasionally browse in the woods. When the storms of winter have driven the cattle to the fold, the numerous herd are put on a stinted allowance—not always of English hay nor of roots. In some instances the farmer will have accomplished his aim if the cattle survive the winter. Not to go more into detail—it is apparent, that as his husbandry is defective in its great principle, it must be defective throughout. His opinions and practice are derived from his ancestors. His own habits have given to them additional force. He may then unaffectedly wonder, that other methods should be thought preferable to those to which he is accustomed—and listen with indifference and distrust, to statements, which demonstratively shew, that his practices are erroneous and against his true interests. He may be an eye witness of the results of a neighbour's better directed labours—notice

the richer products of his improved soil—his finer breed of animals—and be led by his curiosity to examine the various implements employed by the scientific cultivator, and go away with the belief, that a plain and prudent farmer has nothing to learn, but should steadily pursue the beaten track of his ancestors. Should his better reason suggest the probable utility of a new experiment, the momentary impulse towards innovation is checked by rising fears. The disadvantages of his present condition, whatever they may be, have become familiar and are easily borne. The humblest of our species oppressed daily by the miseries of penury, may have the same consolation. There is no species of slavery worse than that which men impose upon themselves in yielding wholly to the guidance of custom and the narrow prejudices which it engenders.

It is a fundamental principle of good and profitable husbandry, that no more land should be laid out for cultivation than the farmer can till in the most skilful and thorough manner. Wherever there is a crowded population, the husbandman may be compelled to seek his subsistence within the limit of a few acres. The resources of art, which he must call to his aid, are alike open to all whether they possess more or less land—and whether they inhabit districts more or less populous—nor are these resources less valuable in the one case than the other; so far as respects the general treatment of the soil, and the great object of increasing its productiveness. If five acres under faithful management can be made to yield a subsistence for a family, shall we be permitted to say that a hundred of equal quality can do no more? If it be said that a refined and thorough cultivation involves an expense which absorbs the profit, let it be remembered, that the skilful farmer often not only obtains a comfortable support from the produce of a few acres, but is enabled from the surplus of his earnings to add progressively to his little territory, and to become opulent. It may be objected, that a result like this cannot be expected without a

preparatory acquisition of science—without much care and much reflection in the choice of means. But on what other terms is success to be expected in any other calling or pursuit? It is no answer to say, that the common operations of a rude husbandry are laborious, and that the farmer only adds to his burdens by permitting his attention to be occupied by whatever is new, that comes recommended as an improvement—he will learn how to make the same labour more productive—he will have the benefit of the experience of the most enlightened and wisest practical men, who cannot be supposed to have toiled in vain in their endeavours to improve the art of husbandry—nor to have had any other aim than to ascertain the means of procuring the greatest profit from their labour.

Farmers are over cautious in admitting innovations on their practice, and discover too much of a jealous reluctance to examine the documents by which the utility of these may be fully proved. No one doubts, that all the arts which contribute to the support and comfort of man in civilized life, have had their origin at different periods, and that at first they were not as perfect as we now find them, but that they have advanced step by step, through progressive stages. Nor will it be questioned that improvements now known to be valuable, have sometimes been long prepared and tendered to the acceptance of mankind before their merit has been admitted. Their authors may have perished with the reputation of visionary men—an ill-merited reputation, as unpropitious to the interests of society, as unjust to the individuals.

Who, looking back on the past, will hesitate to agree, that our posterity, will gather from the same fields five fold more than the present generation? And how is this to be accomplished—by what means? If we look to Europe—to England especially—we find there the necessary means in use. It is to be effected, not so much by an increase of labour, as by a more judicious application of it, with the aid of improved implements. In whatever res-

pects the husbandry of England is preferable to that of our own country—and there can be no doubt it is so in many—some future generation of our people, perhaps wiser than the present, will assuredly adopt these profitable methods of the English farmer. Why then should we now reject them? The reason in favour of receiving them at a future period by our posterity will be no other than may be urged for the adoption of them now—it is—that they are the result of careful and repeated experiment, and that their utility is established.

We are a highly privileged people, in as much as with all the rich resources of a new country, we may avail ourselves of the science and experience of the old world. Our yeomanry are proprietors of estates, which, under skilful management, would entitle them to rank with the wealthy in some parts of Europe. We enjoy a free intercourse with every portion of the world, whence any useful knowledge may be derived—and our husbandmen have not only capacity to judge, but opportunity to gain, whatever any other country can now offer to give variety to our culture, or improvement to our husbandry.

Considerations like these ought to check all unreasonable distrust of what is new. They furnish sufficient reason for keeping the mind open to conviction—and for training it to a habit of liberal inquiry. There is no question here of the truth of abstract speculations. But only how far, what has been found profitable to the inhabitants of other countries by experiment and long use, may be beneficial to us.

A reference to the history of agriculture in the land of our progenitors, will shew, that, as much as the farmers of that country now excel us in the art, at a period so late as that of the first settlement of the English in this country, our common roots and fruits were not cultivated in England—a small portion only of the land had been subjected to tillage, —numerous herds and flocks overran the territory—and almost the whole country presented nothing to the view but an

alternation of pasture and forest. A Baron of the realm, at the period alluded to, enjoyed fewer of the substantial comforts of life than a reputable farmer of the present day. Consider for a moment the advantage, which a knowledge of the potatoe, and the modern method of cultivating it, gives to the farmer of our times over a person in the same class in the reign of Henry the Eighth, of England. The produce of one acre of this root, carefully cultivated, will sustain, for the space of a year, ten persons. It would require but one faithful labourer to manage with proper care ten acres with a crop of the potatoe. Thus by his labour alone a hundred persons might be supplied with a sufficiency of food for the time mentioned.

If a half century ago it had been said that there remained to be known nothing which could be turned to profitable use in agriculture, there is no one here present that could not bear testimony to the absurdity of the assertion; nor would hesitate to say, that it was presumptuous, and against reason. Would it not be as absurd to speak thus of the future? Science is continually engaged in enriching this art—commerce is ever furnishing new materials for experiment. It not only transports the products of one country to another for consumption, but for propagation. It not only brings us from abroad vegetable productions before unknown, but the knowledge of their uses, and the methods of their cultivation.

For what, let me ask, are our times more distinguished, than for the zeal and success with which all science is applied to practical uses? The chemist, the mineralogist, the botanist and the mathematician, are fellow labourers with the practical farmer and the manufacturer. Vain and unprofitable theories no longer engross the attention of men of science. It can no longer be said, as formerly, that an active and feverish imagination is as distinguishing a mark of a philosopher as of a poet. Philosophers are, in our days, *business men*.

There are in almost all parts of Europe associations of distinguished persons, united not only for the purpose of encou-

raging the researches and rewarding the useful discoveries of genius, but for ushering such discoveries into the world under the sanction of their patronage, and for inviting and encouraging the public to avail of them. Societies for the same purposes, not inconsiderable in number, exist also in our own country.

Cultivators of the soil may confidently anticipate an enlargement of their resources, not only by the rapid improvement of the art, but by the multiplication of their products. New staples will find their way into New-England, as they have done, from time to time, elsewhere. Cotton, the great staple of the south, now worth forty millions a year to the United States, was not a native of the country. The grape, which yields the great staple of France, was not indigenous, nor was the olive in the south of Europe. Massachusetts, within a few years, has acquired an invaluable stock, in the Merino sheep. To those who know their intrinsic worth, it will not be thought presumptuous to say, that they will ere long yield us our most valuable staple. Whether we consider the abundance, the fineness, or the beauty of their fleece, they are, in all these respects, a gain to our country. The history of the prevailing prejudice against the animal, were it not too delicate a subject to touch upon, is too recent not to be generally known. The remembrance of the Merino *mania* will soon cease to bring up painful associations, and we shall be better disposed to believe, what is demonstrably true, that we are indebted to Spain for a great source of future wealth. After the *tulipo-mania*, or rage for tulips, had subsisted three years in Holland, from 1634, during which, it took entire possession of that sober people the Dutch, and engrossed in a single town a capital of four and a half millions of dollars, it subsided, and left the tulip to be, as it has ever since continued, the favorite flower of the Hollander. And may we not hope that the Merino sheep, possessing *so much more substantial merit*, will ere long become a universal favourite in Massachusetts?

Discoveries and inventions, the use and benefit of which are familiar, are not always duly valued, because we are not always aware how different would be our condition without them—would we bring distinctly to view, a state of society less improved than that of our own day, and the inconveniences attendant upon a less advanced stage of the useful arts, we should be more inclined to look forward with interest upon every prospect of new acquisitions to our stock of knowledge and means of enjoyment. We have seen how important a rank the modern farmer of England with his skill and resources would have held in the estimation of his countrymen, who had preceded him from two to three centuries. We must not forget that he deserves also to be considered as in advance of the husbandman of our own country. Were it not so, how could he subsist and support the heavy burdens, which the peculiar circumstances of his country have imposed upon him? Not less than half his income is absorbed by taxes—the great extension of the manufactures oblige him to pay dear for labour, and the average prices of the provision markets are not so great as those of our own. Under all these disadvantages he maintains his independence. He is enabled to do so by adopting improved labour-saving implements—by forcing the soil to its full capacity of bearing—by assiduous attention to the accumulating of manures—by proper measures to prevent their waste—and by a judicious application of them—by raising root crops, on an extensive scale, for his cattle—and by an admirable system of order, economy, and neatness, in every branch of husbandry.

In no country of Europe, we have said, are the same class of cultivators so amply endowed with lands as the husbandmen of Massachusetts. The burdens of our government are so light, that they are scarcely more felt than the weight of the atmosphere. The four millions of acres in Massachusetts would sustain a population from a million to a million and a half—and just in proportion as our products increase, there will rise up mouths to consume them.

Were the labours of the cultivators, or the large farms in Massachusetts, confined to such portions of land as their means would enable them to husband in a skilful and faithful manner, there can be no doubt that one third part of the land now employed in tillage would yield as great products as are obtained from the whole. It will be perceived that the farmer may thus increase the value of his farm three fold. The story of a Swiss farmer to the same point, although it may be thought more properly to belong to the pages of the Almanack, than to a discourse on an occasion like the present, I may be allowed to state in substance, as affording a good practical lesson. The person alluded to had portioned in succession three daughters, with a quarter part of his farm to each. As his territory thus diminished, he redoubled his efforts and employed additional art and care in his cultivation, and thus kept up his crops to the same aggregate amount each year, even when there remained to him only a fourth part of the land which he originally possessed.

As an agricultural, community, our progress in improvement cannot be great until the science of breeding and the art of keeping cattle is better understood—until we attach a broader signification to the word *manure*—that great aliment of agriculture, extending it so as to embrace a composition of earths and every species of vegetable refuse and animal offal, as well as the litter and dung of the stable—nor until ploughs and other implements are adopted superior to those now commonly used. It has been ascertained by an accurate instrument adapted to the purpose, that there is a difference in ploughs of the same size and weight, in regard to the power required for the draft, amounting to from *two to six hundred per cent.* It is doubted whether the knowledge of such a difference, or indeed of any, is known generally to our husbandmen or whether it has usually been considered in the purchase of the implement. Every farmer complains of the expense of labour. This discovery will ena-

ble him to dispense with half or perhaps two thirds of his team in one of the most laborious operations of the farm. It will not be out of place here to state, that in one of the northern counties of England, it had been the universal practice to plough with six horses, until, on the institution of a periodical ploughing match, the old ploughs were in a short time laid aside, and new ones on an improved construction substituted. It was soon found that two horses could accomplish the same work which with the ploughs before in use, it had required six horses to perform. How important is such a discovery to the farming interest!

At the present moment the prospect of an increase of his crops, in future years, may not appear to the farmers desirable. The great abundance of the harvest and the difficulty of obtaining a vent for his produce, fill him with despondence. But is it not true, that if he is compelled to sell cheap, he may buy proportionably cheap whatever he may have need of? Besides, the tendency of plenty is to encourage population, and manufactures, and thus to raise the value of land and to increase the permanent demand for the productions of agriculture. Besides, the farmer has a further resource in seasons of uncommon plenty, to prevent waste—that is, to increase his live stock.

But let us not confine ourselves to the consideration of the progress of agriculture as it may concern alone the prosperity of individuals. The individuals in a country may be rich, and the public at the same time be poor—if having nothing to eat may make a country poor—merchants and manufacturers may be opulent, but if agriculture is neglected, neither the one or the other may be able, in certain exigencies, to procure the necessaries of life. I state an extreme case, but it is no less true, that the substantial wealth of a country, which consists in abundance of food, depends on a flourishing state of agriculture. In a time of scarcity, long continued, whatever we call property would lose its value. Agriculture is not only an indispensable resource, as a means

of preserving in being those who now exist, it is no less important as a means of increasing the population of a country. Hitherto our growing numbers have been sustained rather by the clearing of new lands than by any great progressive improvement of the old. But setting apart but a moderate allowance of forest for the various purposes for which it is important, we must look to a better husbandry for the support of a much greater number of inhabitants.

We cannot be at a loss on what rest our surest hopes of public prosperity, when we consider how independent is agriculture of the hazards and reverses to which commerce and manufactures are exposed. "The ordinary revolutions of war and govern-"ment," it has been truly said, "may dry up the sources of "the wealth which arises from these, while that which arises "from the solid improvements of agriculture is durable. "The troubles of the fifteenth and sixteenth centuries greatly "diminished the commerce of Lombardy and Tuscany. But "those countries continued notwithstanding, and still con-"tinue, among the most populous and best cultivated parts "of Europe. The civil wars in Flanders, and the Spanish "domination which succeeded them, chased away the great "commerce of Ghent and Antwerp, but Flanders is still rich, "highly productive, and well peopled."*

The wealth of the merchant may be transferred from one country to another, but that of the land proprietor is as fixed as the earth. It is true, the face of a country may be swept by hostile armies, but it is only the harvest of a season which can fall within their destructive grasp; the productive power of the soil still remains unimpaired. But the wealth of the merchant may perish irretrievably by the conflagration of a city, or be sunk in the ocean.

However individuals may be affected, whether farmers or others, by the common vicissitudes of life, as respects the public, the improvements in agriculture are an imperishable and continually accumulating resource.

* Smith's Wealth of Nations.

But it by no means follows that, because agriculture ought not to be neglected, we may therefore turn away from commerce, as if, on the whole, the balance of its good and ill success were equal. It has done much to enrich individuals engaged in its pursuit, it has done more for agriculture. In those countries to which we have just alluded, as having enjoyed a productive commerce, which subsequently passed away, if their agriculture was, for a long time, unrivalled in Europe, it was that very commerce which nurtured it, and finally gave to it all its refinement.

As agriculturists we have fresh proofs every day of the beneficial operation of commerce on our interests. It takes our surplus produce to its best market. And this is not all—the surplus capital which it throws into the hands of the merchants, naturally tends to the soil as its ultimate destination. Here it finds its greatest security, and here it will be most permanently beneficial to the country. Most of our richest merchants are land proprietors, and to some among them, we are indebted for recent and valuable improvements in agriculture.

It were hardly possible at this time to allude in a public address either to agricultural or commercial interests, much less to treat of them as leading topics, without recalling to the mind of every one, the subject of the new *tariff*, which must again soon engage the attention of Congress. I refer particularly to those parts of it, which are professedly designed for the encouragement of domestic manufactures.

However often and ably the right of Congress to control private industry, and to give it a direction into new channels at discretion, may have been recently combated, it cannot be too often urged, that it is an unauthorised assumption of power. It may well be questioned whether any member of the Convention which framed the Constitution, to whatever extent his jealousy of the power to raise a revenue may have carried his apprehensions, ever conceived that it would be

used to convert a merchant into a manufacturer, at the pleasure of Congress—to compel the farmer to abandon the pursuits of husbandry for the spindle and shuttle—to foreclose the inclinations—the bent of genius, the temperament and tastes of men, and to designate their employments by the statute book. It is no answer to say, that no such power is claimed, and that the measure complained of will produce no such effects—the principle of the measure contemplates such a power, and involves such effects. If government may so burden and embarrass one branch of industry as to discourage the pursuit of it, avowing the purpose to be to build up another branch at the expense of the first, it has power to go on and curtail or annihilate any or all other branches. Should the company of tallow chandlers think proper to represent before Congress, that it would be for the interest of the nation to prohibit the importation of whale oil, by the imposition of a heavy duty, a concurrence of Congress in their views would be attended with this consequence—that not an American whale ship would be again seen on the ocean, at least none, whose cargoes should be destined for the supply of the home market—and the island of Nantucket might soon be deserted by its seven thousand industrious and thriving inhabitants. We see nothing in this case differing in principle from that of the cotton and woollen manufacturers, with the provisions in their favour contained in the new tariff, connected with the views of Congress in making these provisions.

Whatever supposition there may be of public good and national advantage in acts of legislation, by which the claim of one class of industry to the protection of government is declared subordinate to another, it must be ill founded. In general terms, no one will question that the citizen is entitled to the protection of government in his person and property, and that, if such protection means any thing, it is, that each one is to be protected in that *calling*, which he may elect. But upon the doctrine, that government may have its fa-

vourite class, whose interests it may cherish with an exclusive spirit, what becomes of the right to equal protection? In the case we are considering—the merchant enjoys it not—nor the farmer, nor the mechanic. Thus may we go on, and enumerate every denomination of persons in the community, until we come to the fearful result, that the Constitution is a dead letter—and that we have no other security for our rights than the discretionary forbearance of Congress to intermeddle with them.

The present distresses of Great Britain, growing out of a policy, similar to that on which our Government has entered, are known to all. A leading merchant of London, who is also a distinguished statesman,* has pointed out the course by which this accumulation of evil has been brought upon that country. "Whenever" says he, "the assistance of govern-" ment is called for by any class of manufacturers or traders, " it is usual to make the most splendid display of the import-" ance of that particular branch to the nation at large. The " West and East India interests, the ship owners, the manu-" facturers, and others, have all made their representations; " but it should be recollected, that it is contrary to sound po-" licy to advance one beyond its natural means, and still more " so when that *must* be done at the expense of the others."

The reflection is a pleasant one, that while we are defending the interest of the farmer, so far from opposing that of the manufacturer, we are defending that also—because, after all, his interests will find their best security in his own enterprise, skill, and industry. His calculations on the partiality of government will prove fallacious. A policy, which condemns to a subordinate rank the interests of the great mass of the people, must be short-lived. Our manufactures are known to be in a thriving state—the whole country is proud of their success. The theories of mistaken political economists apart—a doubt may exist whether the manufacturers have any thing to urge in favour of the new duties. Their industry is

* Alexander Baring.

protected—they are honoured by the community—and the encouragements, which we are prepared to offer on this anniversary to the farmers of our Commonwealth, are to be extended equally to the manufacturers.

The merchant unembarrassed by prohibitory duties will need no stimulus but his own enterprise. The manufacturer will exhibit to us this day ample proofs that he can thrive without the further aid of the government. The farmer alone declines to avail himself of the means of prosperity. He has been too long accustomed to view himself in the light of a day labourer rather than as the professor of an honourable and lucrative art. The mysteries of husbandry are considered but as the lesson of a day—and every man, the moment he becomes the occupant of a farm, is allowed to style himself a competent farmer. "It fills me with astonish-
" ment," said Columella, the Roman, " that while those, who
" wish to become orators, always have recourse to one as a
" teacher, whom they may take as a model—and those who
" learn music, dancing, or any other of the lighter and more
" frivolous accomplishments, employ, of course, a professed
" teacher ; Agriculture, that most important of all arts, has
" neither masters to teach it, nor pupils who seek to be taught.
" Is there then nothing in it which requires to be studied ?—Is
" there nothing to reward research ? For myself," he conti-
" nues, " when I take an enlarged view of this noblest of all
" pursuits, and survey it on all sides—and consider what it
" embraces that it would be profitable to know, I fear that I
" shall see the end of my days before I shall become a tho-
" rough master of all its mysteries !"

And how melancholy, gentlemen, are some of the consequences of so great a neglect of agriculture amongst us! Of the sixty thousand individuals, who annually emigrate to the south and west from New-England, in search of subsistence, most of them may reach in safety the places of their destination. But if you follow them in imagination, into the wilderness, you will soon see that its morbid dampness and the nu-

merous privations and hardships, to which they are unavoidably exposed, soon finish the work of destruction, which a miserable agriculture had begun. The offspring of parents who possess at home a redundant territory, are compelled, for subsistence, to alienate themselves from their kindred, and to interpose a distance of a thousand or two thousand miles between themselves, and all they have valued from their infancy.

When we learn, that in a canton in one of the highest inhabited regions of the Alps, where neither nature nor art can sustain more than a small number of human beings, it has long been the custom for the young men, on attaining to a certain age, to enlist in the military service either of France or Spain, for a term of years, and that all who decline, remain not only without consideration among their countrymen, but are covered with obloquy, we acquiesce in the necessity of this harsh policy. But we have far other impressions of a course of things bearing a similar aspect in Massachusetts,—when the neglect of agriculture is the only assignable cause of no inconsiderable part of the emigration which takes place from year to year.

Were the modern improvements, (which have been tested,) allowed to spread themselves over the face of our country, and to fertilize our fields, much of the emigration would cease—manufactures would more extensively flourish, and obtain their only sure and permanent support, an abundant and cheap subsistence for the workmen.

But our agricultural societies are every where rising up, like so many temples of science, inviting our citizens to come and do homage to an art, which is prepared to open a fountain of wealth to gladden our whole country. The institution of shows of industry, is admirably adapted to draw our husbandmen away from the influence of injurious prejudices, and still more injurious habits, and to awaken a spirit of emulation and liberal inquiry. Until within a few years the hus-

bandman was known only as the vender of his produce—now, his skill and industry are expressly recognised as public benefits. He will no longer labour in the retirement of his fields, looking only to so humble a result of his toil, as that of a scanty harvest. No—he will have always in remembrance that a day is appointed, in each year, on which, in the face of the world, he may claim to be named as a benefactor to the public, on exhibiting proofs of uncommon diligence and proficiency in his art. He will come *here*—he will meet an assembled community, as eager to adjust his claims as he may be to urge them. They will enter with him into the field where the competition is held. Those, who from inexperience, or other cause, may be incompetent to weigh the merits of the competitors, will seek to inform themselves by inquiry of those more skilled. All will be ambitious of the honour of anticipating the decision of the judges.

The animated discussion, among the multitude, of topics of agriculture and the useful arts, will give a new interest to the various subjects—the zeal here inspired, and the knowledge obtained, will be carried home, and be soon seen in their effects like the invigorating power of a rich *compost*—and the solitude of the country will be relieved, not only by more ardent and better directed labours, but cheered by more exhilarating prospects.

With a power of influence such as this, what limit can we assign to the usefulness of our agricultural societies? The obligation upon them to use this power to its full extent, ought to be deeply impressed—nor should they remit their endeavours to make themselves acquainted with the improvements, which so liberal and so progressive an art may from time to time offer, whether they originate in our own, or in other countries. Nor is it less important, as a means of diffusing these throughout the State, that the Societies should seek to increase their funds, so that their power of bestowing premiums may be commensurate with the improvements they may think it important to recommend. The

time, we may hope, will arrive, when the smallest details of rural economy may become subjects of reward, as well as the leading operations of husbandry. I say the smallest details, because, in husbandry there is nothing which is unimportant or uninteresting. There is nothing so small as not to have, either in a moral or economical view, an influence on the well being of the farmer. There is nothing of so little consequence, that, if disregarded, its neglect will not be perceived to mar the harmony of that delightful picture—a well ordered, neat, and polished husbandry. How soon, we may impatiently ask, how soon shall we behold the day, when such a picture shall gladden our eyes, whichever way we turn them, in this land of precious privileges!

OFFICIAL REPORTS OF THE MASSACHUSETTS AGRICULTURAL SOCIETY, UPON THE SUBJECT OF THE CATTLE SHOW, EXHIBITION OF MANUFACTURES, PLOUGHING MATCH, AND AGRICULTURAL INVENTIONS FOR THE YEAR PAST—AS ANNOUNCED AT THEIR ANNIVERSARY HELD AT BRIGHTON ON THE SEVENTEENTH AND EIGHTEENTH DAYS OF OCTOBER, 1820.

FIRST REPORT.

REPORT of the committee appointed to award premiums on every description of *domestic animals* included in their list of premiums. This committee consisted of one member of the board of Trustees, and of four other gentlemen specially selected for their knowledge and experience in live stock—and not connected with the board of trustees; viz. Mr. Harrington, of Roxbury; Mr. White, of Watertown; Mr. Gates, of Dedham, and Mr. Perry, of Sherburne.

The chairman of this committee repeated *verbally* to the board, that the duties of that committee, owing to the en-

larged number of competitors for premiums, had been so much increased, that it was impossible for him to draw up a written report, but he endeavoured to state from memory the principles which had governed them in their decision. He would endeavour not to exaggerate the facts, while he should deem it a duty alike to do justice to the important influence which the society by its premiums had produced upon our agriculture, and to the spirit and intelligence, by which they had been seconded and supported by the intelligent cultivators of the state. It is scarcely possible that any man could have the hardihood to misrepresent the state of improvement as to an exhibition which is so *open to all the world.* Every spectator was a self constituted judge, and would instantly condemn any attempt at misrepresentation. The effect of this show, on the character and qualities of our domestic animals, was so marked and so unquestionable, that a man who had viewed the exhibition in its infancy four years since, could scarcely believe that he was in the same society and surrounded by the same cultivators, who assembled and brought their best productions at that period. The race of hogs was so entirely changed and improved, that one could with difficulty recognize a feature of the tall, raw-boned, thick-legged race which had for so many years been the disgrace, while they had consumed the profits, of the farmer of Massachusetts. The same remark applied with still greater force to the exhibition of fat cattle. The society having announced that their premiums should no longer be given to monstrous and overgrown animals—that *mere* weight *alone* should cease to be the criterion, but that adopting the rules of the inimitable Bakewell, whose name ought to be placed by the side of Olivier de Serres the great farmer of France, and of Evelyn who gained so much glory in Great Britain as a practical cultivator, they should hereafter award their premiums to the animals which presented the finest forms and discovered the greatest dis-

position or aptitude to acquire flesh with the smallest possible expense.

It is surely a proof, if any thing of this sort is susceptible of proof, that the effects of this society and its shows, have been productive of great benefit to the state; that instead of two or three, we had this year no less than fourteen fat oxen, the great part of which were beautiful in their forms, and whose average weight exceeded two thousand pounds. The particulars we shall state when we come to the specific awards and premiums.

The same degree and indeed a superior degree of advancement and progress in domestic animals, was observable in the *full grown* bulls, as distinguished from bull calves.

Here we cannot but congratulate the well wishers to the prosperity of this *grazing State* on the enterprise, patriotism and public spirit which have introduced the improved races of Great Britain. There were, and there probably are yet individuals who think the money expended by our society for *this* object a *waste*.

But how illiberal is this prejudice. It is not more than half a century since the farmers of England, with immense wealth, and not valuing the price of 5000 dollars for an extraordinary bull calf, began to ameliorate *their* stock. There is no doubt we had as good in our *own* country—but who seeks them out? Who arrested by a liberal price, the knife of the butcher about to sacrifice an extraordinary animal, who if preserved would essentially improve our breed? No one —until the agricultural societies turned their attention to it. A bull in Great Britain fifty years since had a standard price —No man would pay more for *one* bull than *another*.—But Bakewell and Princeps and other liberal farmers adopted the principle of amelioration, and soon they were rewarded not only by public distinction, but by pecuniary gain; and an animal that could before be bought without discrimination from any dairy full grown at 50 dollars, often at six months old brought from 4000 to 6000 dollars. Nor was

this the effect of any ridiculous passion, like our prices for merino rams. It sustained itself for 20 years, and yet continues to exist in that nation—a proof and the best proof of the soundness of the opinion on which these preferences were founded.

It is happy for the Massachusetts farmers that the Massachusetts Agricultural Society did not embark *earlier* in the encouragement of these *foreign* animals. We permitted the rage to vent itself in Great Britain before we began—and we had the advantage of knowing *what* breed, after *twenty years* trial, English farmers had found *most productive.* On the whole, it seemed that the general opinion was in favour of the *short horned animals*—the long horned one, (our old *native* race) being too large and raw boned for profit.—The Holderness, and the Teeswater, being a variety of the short-horned breed, were preferred.

It is a great pleasure to us to announce that our premiums and encouragement have induced Mr. Williams of Northborough to introduce a pure Teeswater bull—Mr. Parsons, a Holderness, and Mr. Coolidge his admirable bull Cœlebs of the same race, though he may be from a different, but most certainly an equally good stock. Now we venture to appeal to any persons who did the *society and themselves the honour* of visiting our Show, whether the public did not in these instances in *every case* anticipate our decision? It was scarcely possible to keep off the throng from the pens in which these superior animals were shown. We ought not to omit the introduction of the Flanders breed, by Col. Thorndike, a stock which, if we can judge either from their reputation in Europe, or the present promise of the progeny here, may prove little if any inferior for the dairy to the best races of England. But suppose we *do not* succeed by these importations —we have the satisfaction of having made great and laudable efforts, and we shall assuredly excite our farmers to strive to equal these *boasted* races of *foreign* growth. The greatest benefits we have ever hoped to derive were, that we should select, and save from indiscriminate slaughter, the

finest of our *own* stock, while we should gradually improve it by crosses with the *best* animals of *foreign* countries.

There can be no stronger proof of the benefits we have already derived, than the fact, that the *progeny* of the foreign races are by the public as well as the committee, preferred to those of our native breeds.

One remark more we beg leave to make before we announce the prizes awarded on Stock.—It is not possible for any body of men to take *more efficient* measures to secure impartiality than the Trustees of this Society have done. We have never more than *one* Trustee on any *one* committee, and the majority are strangers. On this great object and first design of the show, domestic animals, we have four strangers to one Trustee, and that one was never a competitor for *any* prize.

The prizes awarded were as follows—we publish them at large, because we think the just praise for successful exertions, far more exciting and valuable than the prizes *themselves*.

For the best Bull, to *Comet*, owned by Cornelius Coolidge, Esq. of Dorchester, the progeny of his excellent imported Bull Cœlebs, but raised with great care by Mr. Jaques of Charlestown—the first prize of forty dollars.

For the next best Bull, a *Native* one—Payson Williams of Fitchburg, 25 dollars.

For the best Bull Calf, not less than five or more than twelve months old, to Moses Coolidge, Esq. of Watertown, progeny of Cœlebs, imported by his son, 15 dollars.

For the next best Bull Calf, to John Barker of Leominster, 8 dollars.

For the best Milch Cow, not less than three years old, to Nathan Sanderson of Waltham, which made 13½ pounds of butter per week on an average, 40 dollars.

For the next best to Asa Wheeler of East Sudbury, 30 dollars.

For the third best do. to Mr. Samuel Dudley of Brighton, 20 dollars.

For the best Ox, fitted for slaughter, to Josiah Morton, of Hatfield, 50 dollars—weight of the Ox 2578.

For the next best do. Henry Chapin son of Col. Chapin, the owner of the famous Oxen, Magnus and Maximus, 30 dollars—weight 2149.

For the next best do. Lewis Barnard, 30 dollars—weight 2173.

For the best Merino Wether, Nathaniel Ingersoll, Esq. Brookline, 20 dollars.

For the next best do. Gen. Nathaniel Austin of Charlestown, 10 dollars.

For the best Merino Ram, Nathaniel Ingersoll, Esq. Brookline, 20 dollars.

For the next best do. Benjamin Savery, Byfield, 10 dollars.

For the best Merino Ewe, Nathaniel Ingersoll, Esq. of Brookline, 30 dollars.

For the next best do. Benjamin Savery, Byfield, 15 dollars.

For the best Boar, to Dr. Francis Moore of Brighton, *imported* breed, and crossed with the Byfield, 5 dollars.

For the best Sow, to Samuel Tewksbury, Chelsea, 10 dollars.

For the next best do. Capt Orange Wright, Northampton, 5 dollars.

For the best store Pigs, to Francis Winship, Esq. of Brighton, 10 dollars—chiefly imported breed.

For the next best do. Isaac Davenport, Esq. of Milton, 5 dollars.

For the best Heifer under 3 years, Mark Vose, Watertown, 15 dollars.

For the next best do. Amos Russell, Deerfield.

These are all our premiums on Stock, but it must occur to every liberal minded man, that it is impossible in this

branch to do exact justice to all, where we have *ten* competitors for *one* premium.

It must be after all only an *approximation* to justice, and illiberal must that *man be*, and *small* must be his regard for the *public* good, who quarrels with a decision, because another man's animal is preferred to his own. He ought rather to rejoice because he finds *himself outdone*. We know this is not human nature, because human nature is imperfect, and for this reason we shall notice those which, though they did *not* receive, yet in many states would have had a premium, and who *deserved* one *here* had we more money to give, or a smaller number of excellent animals entered for premiums.

Bulls.—That of Mr. Wheeler of Framingham, from Fill Pail, (Mr. Thorndike's Bull) was entitled to great notice, but he had the premium last year; Mr. Prince's of Roxbury, also from Fill Pail, was a noble animal; Mr. Parker's of Chelmsford, and Mr. Leland's of Sherburne, also attracted the attention of the committee.

Of the Bull Calves.—That presented by Hervey Stone; from Mr. Parson's Holderness; that of the Rev. John Codman, from the same stock; Peter Clark's of Watertown, and Oliver Locke's of Lexington, were all of them such as we seldom see in our country in Cattle Shows.

Of the Cows.—That of the Hon. Mr. Welles of Dorchester, divided the suffrages of the committee. Indeed his whole stock did great honour to the country and to his exertions and care. Isaac Howe of Dorchester, exhibited a fine Cow, as did John Rand of Weston. Thomas Williams, Esq. of Roxbury, manifested his zeal for the promotion of our objects, by exhibiting a fine race of animals from the stock imported by Charles Vaughan, Esq. of the same race from which descended the great Chapin Oxen.

Fat Oxen.—John English of Newton, exhibited an Ox, weight 2076; Dr. Isaac Hurd of Concord, a beautiful one, not weighed; Francis Richardson of Billerica, an Ox weigh-

ing 2103; John Richards, Esq. of Newton, 2 Oxen, joint weight 4301; Mr. Chapin to whom the second prize was given, 3 Oxen weighing over 2000 pounds each; John Rich of Sutton, a beautiful pair, weighing jointly 3964.

Heifers.—The most distinguished were Hervey Stone's by Fill Pail and from a Holderness Cow, John Richardson, Esq. by Fill Pail; John Prince, Esq.; a fine display of Fill Pail's progeny by Mr. Pomeroy, and Dr. Chaplin of Cambridge.

Boars, which were thought fine.—Mr. Tewksbury's and Mr. Wright's; both of whom obtained premiums for Sows.

Sows.—There never was so perfect an animal exhibited at our Shows of the race of Hogs as Mr. Prince's Sow, (not offered for premium,) of the most improved British race. It must be seen that as to *local* feelings, we have *had none*, having distributed prizes over the whole State, except the Southern district, who never send us samples.

JOHN LOWELL, *Chairman.*

SECOND REPORT.

The Committee on Manufactures, viz:—Richard Sullivan, Chairman, *Abbot Lawrence* and *John Lemist*, adjudged the Premiums, as follows:—

For Broadcloths—To the Watertown Manufacturing Company, the first premium, 30 dollars.

To the Bellingham Manufacturing Company, the second premium, 20 dollars.

For Household Woollen Cloth—To Jonas Pollard of Bolton, the first premium, 12 dollars.

To Payson Williams of Fitchburg, the second premium, 8 dollars.

Cassimeres—To the Walcott Woollen Manufacturing Company, the first premium, 15 dollars.

To Richard Crowninshield, the second premium, 10 dollars.

To Harriet Clapp of Boston, for a Down Tippet, 2 dollars.

To Miss Yvonett of Boston for a Cap, 2 dollars.

The specimens of Thread Lace were superior in the opinion of the Committee to those exhibited last year—They were of great beauty. The manufacture is increasing and receiving sufficient encouragement by the demand, to progress rapidly.

A variety of articles were offered for inspection which did great credit to the skill and ingenuity of the persons by whom they were wrought, but the Committee have not found sufficient time to enumerate them. An elegant Time Piece the workmanship of Mr. Curtis of Concord, is deserving of particular mention.

The Committee were gratified in observing a great improvement in the Broadcloths since the exhibition of the last year.

The Cotton goods were of a very superior quality. Those of the Waltham Factory were thought equal to any of the same class, which those of the Committee, conversant with this kind of manufacture, had ever seen.

The Cotton Shirtings of Mr. Hart and those of Mr. Benedick, of household manufacture were of a very fine quality and uncommonly good fabrick. Those of Mr. Benedick would have been entitled to a premium had there been five pieces—there were only four entered.

The Cassimeres of the Wolcott Woollen Factory were of an excellent fabrick and well finished and far better than any exhibited in former years. The Sattinets were equal to any ever imported.

The Flannel to which a premium was awarded, was remarked as being of a better quality than any of American manufacture which the Committee had ever before seen.

The Blankets for which a premium was given, were fine and soft, and of as strong a fabric as can be made of the short wool of the country. The committee beg leave to suggest

in conclusion, that the Blankets of the home manufacture can never be of a firm and durable quality, until the sheep which yields the long staple wool is introduced from Europe.

The Committee have recommended large gratuities for the Bonnets manufactured from the Rye Straw and from Grass, in imitation of the Leghorn Bonnets, because this article always comes to us from abroad charged at very high prices. The present exhibition has placed it beyond doubt that Bonnets equal to the Leghorns of a medium quality, can be manufactured in this country. There were a number of specimens of this quality exhibited, which were made in families, the manufacture will probably increase rapidly and supersede the necessity of further importation.

RICHARD SULLIVAN, *Chairman.*

Brighton, Oct. 18th, 1820.

THIRD REPORT.

The committee on the Ploughing Match, viz. S. W. Pomeroy, one of the Board of Trustees, *Benjamin Goddard* of Brookline and *Paul Upton* of Salem, reported as follows.

That a green sward 28 rods in length, was divided into sections of one quarter of an acre, which the Competitors were directed to plough not less than five inches in depth.

That five Competitors entered and took their sections by lot, viz:—

Lot No. 1.—Samuel Ward of Roxbury, finished in 47 minutes, furrows turned 20—one yoke of Oxen Ploughman and Driver.

No. 2.—Gorham Parsons of Brighton, finished in 41 minutes, furrows turned 20—one yoke of Oxen no Driver.

No. 3.—Silas Dudley of Sutton, finished in 38 minutes, furrows turned 20—one yoke of Oxen, no Driver, himself Ploughman.

No. 4.—Luke Fisk of Waltham, finished in 46 minutes, furrows turned 18—one yoke of Oxen, Ploughman and Driver.

No. 5.—Thomas Whitcombe of Lexington, finished in 38 minutes, furrows turned 20—two yoke of Oxen, Ploughman D. Pollard and himself Driver.

The Committee awarded as follows, viz:—

1st Premium to Gorham Parsons, Plough,	$ 20	
Ploughman, Hervey Stone,	10	
Do. (no Driver.)	5	
		$35
2d Premium to Samuel Ward, Plough,	$12	
Ploughman, Thomas Perkins,	6	
Driver, Wm. Ward, (a Lad,)	3	
		$21
3d Premium to Luke Fisk, Plough,	$8	
Himself Ploughman,	4	
Driver, Jonas Bemis,	2	
		$14—70

Your Committee have to remark, that the Teams appeared to be well trained and in fine condition, and it was gratifying to observe, in Mr. *Dudley*, a competitor from the County of *Worcester;* who may probably attribute his failure of success to an ordinary plough, and being less attentive to the execution of his work, than to the display of the power and agility of his Oxen, which were much admired. Though "*small in size*," compared with others on the field, they were certainly "*great in value*," and tended to confirm the opinion, that the county justly styled the *heart of the Commonwealth*, may boast of possessing a race of Working Cattle not surpassed in any country.

The unfavourable weather prevented the committee from testing, by the *Dynanometer*, the comparative resistance of the several Ploughs; and they regret that there were not in competition any of *Wood's or Freeborn's Cast Iron Ploughs*, which appear to be gaining celebrity.

The attention of the committee was attracted by the exhibition of a Plough presented to Gorham Parsons, Esq. by the Hon. Philip J. Schuyler of Rhinebeck, New York, and made by Thomas Burden of Utica, in that state, resembling in its general form and structure, the SMALL SCOTCH Plough; and though not entered for the Ploughing Match, yet, from the little resistance apparently encountered in its work, they are impelled by a sense of the important improvements of which the *main pillar of husbandry* is susceptible, to deviate from the strict line of duty assigned them, and offer their opinion, that this Plough merits further trial and more particular examination.

But it is to be hoped that the MECHANICIANS of *Massachusetts*, who have so clearly demonstrated their capacity to improve upon the complicated Machines of the most celebrated European Artists, will direct their attention to this long neglected simple implement; for they must be aware, that the INCLINED PLANE and the SCREW, with MECHANICAL SCIENCE, are as applicable to the Plough, as they are dependent upon it for motion and support.

S. W. POMEROY, *Chairman.*

Brighton, Oct. 18, 1820.

N. B. The committee recommended to the notice of the Trustees, Henry Burrick, a Yorkshire Ploughman, for his skill and voluntary services in the management of Burden's Plough—in consideration of which, and of his commendable conduct with Mr. Derby's Scotch Plough at the last year's Ploughing Match, they granted him a further gratuity of five dollars.

FOURTH REPORT.

THE Committee on Working Oxen report:—That they have attended to the duty of examining the strength, docility, form, match and general power of the Cattle presented to them for premium.

The number of Cattle were *nine* yoke of Working Oxen.

After as attentive a comparison as your committee were capable of, they awarded as follows :—

To Benjamin Woodbury, of Sutton, 1st premium, paid, - -	$30
To Leonard Smith, of Waltham, 2d, - -	25
To John Rich, of Sutton, 3d, paid, - -	20
To Silas Dudley, of Sutton, 4th, paid, -	15
To Luke Fiske of Waltham, 5th, paid, - -	10

The committee cannot fail to express their regret and surprise that, whilst these so liberal premiums are offered by the Society, there should yet be so few in number of well trained cattle. It is to be hoped that more perfection in training, particularly with a waggon, will be attained by our farmers.—The backing is an important and indispensable qualification to form a good team. Whilst our show exhibits a fine specimen of the breed and power of our cattle, how much is it to be regretted, that the instruction and training, of which our farmers are so capable, should be omitted; and thus, through mere inattention, fail in that imposing and grand effect of which this noble animal is so susceptible.

Your committee feel it a duty thus to appeal to the capacity and intelligence of our husbandmen, with a confidence that a substantial benefit may and will be derived from this most desirable attention. It will not be allowed to be said, that every thing improves as to our stock, but our care, our training, and our estimation of its utility. All which is submitted.

JOHN WELLES, *Chairman, per order.*

FIFTH REPORT.

The Committee on the subject of Inventions, Report:

That no machine was presented for their examination for which any specific premium was offered by the Trustees —so that if any be granted for any of those which have been entered for premium, it must be under the head of "an agricultural implement of an invention, which shall in the opinion of the Trustees deserve a reward."

The first of this description, which came under the examination of your committee, was a hominy mill, presented by the Hon. Nathan Read, accompanied by a certificate of R. Manning and company, that it had been used at their livery stable; that it cracked corn with great facility, and answers the purpose perfectly. It is a cylinder, with steel teeth, moving over a concave cylinder with similar teeth—this last being movable, so as to regulate the fineness and coarseness of the meal. It is also provided with a feeding roller, which regulates the quantity of corn fed. It ground a peck of yellow Massachusetts corn in four minutes. The meal made measured one peck and two quarts. The whole was perfectly cracked. It appeared to your committee to be simple in its construction, and not likely to get out of order. The price at which it would be afforded was stated to be thirty-five dollars. Your committee deem it an invention likely to be useful to the agricultural interest, and recommend a premium of twenty dollars should be granted by the society.

A corn-sheller was entered for premium by Reuben Moore, which was a cylinder with iron teeth, moving over a concave semi-cylinder, with iron teeth. It performed the work of shelling a peck in a minute. It is in the opinion of your committee a useful machine. But as it in no material part differs, as far as they could perceive, from machines, used for a similar purpose, in this vicinity for many years past, they do not deem it entitled to any premium.

A corn-sheller was also entered for premium by Joshua Melville—like the last, it was a cylinder with iron teeth, moving over a semicircular cylinder, also provided with iron teeth. But it differed from the preceding in this, that the concave cylinder was moveable, and provided with a spring, which enabled the machine to shell equally, corn of every size. This last your committee deem a new invention, and of some importance to the old concave cylinder, enabling the work to be done more easily and faithfully. It shelled a peck in fifty seconds. The cost of the machine was stated to be eighteen dollars. The application of the spring to the concave cylinder would entitle it to some notice from the trustees, were it not the decided opinion of your committee that the vertical cast iron corn-sheller which was exhibited the last year and patented in New York, the cost of which does not materially differ from that under consideration, and which is now used and decidedly approved by several gentlemen in this vicinity, is a better instrument. And although your committee are anxious to encourage every species of agricultural invention, yet they deem it a rule, not only that the machine offered should be an improvement in itself, but that upon the whole it should be better than any machine for the same purpose, usually known and approved. On this account they cannot recommend any premium in this case.

A straw-cutter was presented for premium by Mr. Giles Dayton, Jr. which being patented, and the specification minute and embracing many particulars, your committee forbear to enumerate the particulars on which its claim as an invention depends. Its operation in the presence of your committee was to cut one bushel of chaff in a minute, with great regularity. It is cheap, the expense being only ten dollars; simple, and not easily put out of order. Considering all the circumstances connected with this machine, your committee recommend that the proprietor receive a premium of ten dollars.

A plough for paring meadows was presented for premium by Mr. John Guild. It is the application of a triangular iron of a breast paring hoe to a plough beam, provided with a cutting-knife. The machine is simple, and unquestionably useful, in removing the sward of meadows—cutting up cranberry vines, and producing an even surface; of which Mr. Guild produced a certificate of Mr. Greenough, who had seen the machine and its effect. Considering the nature of the invention, your committee recommend it as worthy the notice of the Trustees, and that he receive a premium of ten dollars.

A pistol with seven barrels, so constructed as to discharge seven balls successively with once loading and priming, was presented by Mr. Artemas Wheeler. Your committee saw its effect, which was conformable to the statement of the inventor, and was also deemed by military gentlemen present, an invention which would be useful in the naval service, as a boarding pistol. Your committee do not deem themselves authorised, notwithstanding the ingenuity displayed in its construction, to recommend any premium, it not being an instrument of use in agriculture; and having no certificate of its having been used and approved by a practical farmer!

A machine, called a double forcing pump, was presented for the examination of your committee, by Mr. Thomas Kilvert. It however not having been entered according to the requisitions of the trustees, and no certificate of its use or approbation by practical men being produced, your committee have not deemed it their duty to report more particularly on its operations.

A machine called a *flax seed separater* was sent by Mr. Elihu Hotchkiss, of Vermont, accompanied by various certificates. But no person was present either to explain its operation, nor had your committee any opportunity of testing by actual experiment, its power. Your committee therefore waived all decision on the subject, although their general impressions were favourable to its utility.

Your committee have seen with great satisfaction an increase in the number of inventions offered for premium. They regret however that there has been so little attention paid to the rules prescribed by the Trustees, and that certificates of practical operation have been so few. In distributing the public patronage, with which the Trustees are entrusted, it is essential in the case of inventions, that the committee charged with that subject, to be satisfied not only that what is offered is actually an invention, but also that it has been approved by practical men in their common course of business, and that it is not only an improvement, but also that the machine offered is better than any in common use. An attention to principles of this kind, at once so plain and so just, will tend to impress upon the minds of inventors the necessity of coming furnished with the proof of practical effect, required by the trustees; and also relieve the committee from the painful necessity of rejecting applications for useful improvements on the ground that better machines on the whole, are already in the possession of the public.

By order of the committee,

JOSIAH QUINCY, *Chairman.*

SIXTH REPORT.

THE Committee appointed to consider the claims for premiums on Agricultural Experiments, report :—

That Mr. Solomon Warner, of Northampton, in the County of Hampshire, is entitled to the Society's premium of thirty dollars, for a Crop of Winter Wheat, being thirty-two bushels and two quarts, raised on one acre of land.

That the Hon. Jonathan Hunnewell, of Boston, in the County of Suffolk, is entitled to the Society's premium of thirty dollars, for a Crop of Indian Corn, being two hundred and twenty-two bushels and one half of a bushel, measured

in the ears, equal to one hundred and eleven bushels and one peck of shelled corn, raised on one acre of his farm in Newton, in the County of Middlesex.

That the Hon. Oliver Fiske, of Worcester, in the County of Worcester, in entitled to the Society's premium of thirty dollars, " for the most satisfactory experiment to ascertain the best mode of raising Indian Corn, in hills, or in rows ;" it will be seen by the certificates accompanying this report, that, from one half of an acre of land planted in rows, the produce was twenty-eight and one half double bushels of Corn in the ears ; the same quantity of land planted in hills produced only twenty-three and one half double bushels ;— the entire produce of the acre being equal to fifty-two bushels of shelled corn.

That Payson Williams, Esq. of Fitchburg, in the County of Worcester, is entitled to the Society's premium of twenty dollars, for a crop of Potatoes, being six hundred and fourteen bushels, raised on one acre of land.

That John Prince, Esq. of Roxbury, in the County of Norfolk, is entitled to the Society's premium of twenty dollars, for a crop of Mangel Wurtzel, being six hundred and seventy bushels and one half bushel, raised on one acre of land.

That Mr. Francis Winship, of Brighton, in the County of Middlesex, is entitled to the Society's premium of twenty dollars, for a crop of Cabbages, being thirty-two tons and two hundred weight, raised on one acre of land.

That Mr. Ebenezer Thrasher, of Salem, in the County of Essex, is entitled to the Society's premium of twenty dollars, for a crop of Carrots, weighing, exclusive of their tops, twenty-one tons, four hundred and one half hundred, equal to eight hundred and forty-nine bushels of fifty-six pounds each, raised on one acre of land. And the said Ebenezer Thrasher, is also entitled to the premium of twenty dollars, for a crop of Beets, being three hundred and twenty-three barrels, weighing, exclusive of their tops, nineteen tons, fifteen hun-

dred and eleven pounds, equal to seven hundred and ninety bushels, of fifty-six pounds each, raised on the same quantity of land.

The Hon. Samuel Dana, of Groton, in the County of Middlesex, as competitor for the premium offered by the Trustees, for the best crop of common Turnips. Mr. Asa Stebbins, jun. of Deerfield, in the County of Franklin; Mr. Nathaniel S. Bennett, of Framingham, in the County of Middlesex; and Mr. J. S. Low, of Andover, in the County of Essex, for the best crop of Indian Corn; severally caused their names to be entered, but did not furnish the Committee with the evidence prescribed by the rules of the Trustees.

No claims for premiums were exhibited to the Committee, for introducing a Grass superior to any now cultivated in this State—for turning in green crops as a manure, and proving its utility and cheapness over any other manure—nor for proving by actual experiment, the best season and mode of laying down lands to grass, whether spring, summer, or fall seeding be preferable, and with or without grain on different soils.

The Committee are much gratified in having it in their power to state to the Board the following information, which has been communicated to them from the most unquestionable sources, to wit: That Mr. Hervey Stone raised the last season, on one acre of the farm of Gorham Parsons, Esq. in Brighton, twenty-two and one half bushels of spring wheat. Ezekiel Hersey Derby, Esq. of Salem, raised on three quarters of an acre, seven hundred and twenty bushels of Carrots, exclusive of their tops, which were estimated by competent judges to weigh five tons.

Mr. Gardiner Whiting, of Charlestown, raised on one acre of land, on Bunker Hill, forty-eight bushels and four quarts of Rye. Mr. Aaron Capin, of Dorchester, raised on four acres, three quarters and twenty-six rods, fourteen tons and sixteen hundred weight of Hay, equal to about three tons to the acre, leaving on the same land grass sufficient, in

the opinions of several respectable Farmers, to make two tons of Hay, " which could not be mowed on account of its being badly lodged." Mr. Dennis Stebbins, of Deerfield, raised five hundred and thirteen bushels of Potatoes, on one acre of land. And Mr. Tristram Little, of Newbury, raised on five eighths of an acre, four hundred and twenty bushels of common Turnips.

By order of the Committee,

THOMAS L. WINTHROP, *Chairman.*

Boston, December 21, 1820.

I Solomon Warner, of Northampton, in the County of Hampshire, do testify and say, that in the spring of 1819, I cleared a piece of wood-land, about three acres, and after the summer harvest succeeding, I ploughed it three times, and prepared it for a wheat crop. I prepared the seed-wheat by soaking it three days in a salt pickle, as strong as I could make it. I then drained the seed and rolled it in slacked lime. I put one and a half bushels of seed on each acre. No manure was made use of, and no other cultivation pursued. The labour on each acre in ploughing and getting in the seed was three days work with two hands and one team of a single yoke of oxen. I reaped the crop in August, and I caused one acre of the piece to be carefully marked off and measured by Mr. Curtis, a sworn surveyor. The crop from that acre was harvested by itself, and put into my barn, on a separate scaffold, where no other grain was put. In November of the present year, the grain from the aforesaid admeasured acre was thrashed, and carefully measured in a half bushel. It measured thirty-two bushels and two quarts. The land was rocky and the growth of timber, oak, chesnut, and walnut, and was virgin land never before cultivated.

And further the deponent saith not.

SOLOMON WARNER.

I Joshua Curtis of Northampton, of lawful age, testify and say, that I am a sworn surveyor of land, that I measured the land of Mr. Solomon Warner, on which he raised his wheat the past year, which he offers for premium. That the plot measured precisely one acre, and lay on the North-west corner of the field. And further saith not.

JOSHUA CURTIS.

I Abisha Williams, of Williamsburgh, of lawful age, testify and say, that I assisted in reaping and carting the wheat raised on the acre mentioned in the preceding certificate of Mr. Curtis, and deposited it by itself on the west scaffold of the said Solomon's barn. And further saith not.

ABISHA WILLIAMS.

We, Paul Warner, of Williamsburgh, and David Ring, of Chesterfield, both of lawful age, testify and say, that we threshed and measured the wheat lying on the west scaffold of Mr. Warner's barn, mentioned in the preceding affidavits, and the measure was thirty-two bushels and two quarts.

PAUL WARNER.
DAVID RING.

Hampshire, ss. 22d November, 1820.—Solomon Warner, Joshua Curtis, Abisha Williams, Paul Warner, and David King, personally appeared and severally made oath to the truth of the foregoing affidavits, by them respectively subscribed.

Before me,

JONATHAN LYMAN, *Justice of the Peace.*

[To the Trustees of the Massachusetts Agricultural Society.]

THE following is the statement of the production of one acre of land cultivated by me on my farm at Newton, in the year 1819, and also 1820. Previous to the year 1819, this land had been used as pasture ground for nearly thirty years. In the fall of 1818, this ground was ploughed for the first time since my remembrance. In the spring of 1819, it was again well ploughed and planted with corn in hills, in the common form, but well manured in the *hill* with a mixture of horse-dung, lime, and ashes; when the corn was fit for weeding, it was ashed by putting about half a pint of unleached ashes to each hill; a part, however, was left without any ashes. The difference was very visible between the corn, which had ashes applied to it, from that which had none; and the rapidity of the growth caused an early half hilling at this time, as also when the corn was weeded, it had a slight ploughing. After which a plough was not suffered amongst it; nor had it any more hoeing, except to destroy the worst of the weeds, and to stir in the turnip seed which was sown amongst it. The rapid growth and luxuriant appearance of this piece of corn, attracted the attention of all who passed on the road near it. In October, I measured off one acre; had the corn gathered, husked, and accurately measured, and there were 156½ bushels of corn in the ear; several bushels of the ears were measured, then shelled, and measured again. The result was, two bushels in the ear turned out more than one bushel in the kernel. I, therefore, thought myself safe in calculating that this one acre produced 78¼ bushels of corn when shelled. The seed of this corn was presented me by Samuel Blagg, Esq. of Boston, who procured it from William Jarvis, Esq. of Vermont. It is a large yellow kernel of 12, 14 and 16 rows to the ear. I have counted upward of 700 kernels on a single ear. It is said by some to be the same kind of corn as that which has

been raised of late years by Gorham Parsons, Esq. of Brighton, and also by Samuel W. Pomeroy, Esq., and the same kind which he presented to the members of the Legislature when in session a few years since. For the present year, 1820, the same ground was ploughed last fall; again well ploughed this spring, furrowed out at a distance of four feet, leaving each furrow one foot wide. The furrows were well manured with a mixture of *horse dung, lime, ashes, and dock mud.* The seed raised the last year was planted in the drill on each furrow, making *three rows* to each furrow. Care was taken to drop the corn as near six inches apart as possible without wasting time. When the corn was fit for weeding, care was taken to thin it out where it was too thick; after weeding, it was ashed by spreading unleached ashes through each drill or furrow. It was evident this corn felt the effects of this last years manure, as the growth was more rapid, and called for a still earlier half hilling, which was applied with a slight ploughing; immediately after half-hilling, the suckers were all carefully cut off. No more ploughing or hoeing was applied, except so much as to destroy weeds and sow turnips. This corn was planted in the latter part of May; the stalks cut the first week in September, at which time much of the corn would have answered to have been ground. It remained in the field until the 13th of October, at which time it appeared as though some pains had been taken to strip it of the husks; but it is the nature of this corn to husk itself as it stands in the field. It is a species of corn, which, in good seasons, requires but ninety days from planting to be perfectly out of the way of frost, and much of it will, in that time, answer to be ground. An acre of this land planted in drills was measured, and the corn cut up, husked, and measured, which produced 222½ bushels of corn in the ear; several bushels of the ears were shelled, and measured in the kernel, and in every case it was found that two bushels of ears did produce rather over one in the kernel. Thus we fairly calculate, that we had from one acre of ground, one hundred eleven bushels and

one peck of corn. The land improved *was good* with a *deep black soil*, followed by a stratum of yellow loam, terminating with a hard pan of clayey gravel at the depth of about two feet. It will be found by planting in this mode, of *three rows to each furrow*, there will be more than double the stalks of corn in a rod, than in the usual way of planting in hills. Some may object to this mode, because they can plough only one way, and not cross plough. But it will be found, that it takes no more time to hoe the corn in drills than it will to do the *cross ploughing*, and it requires but one weeding and one hoeing. The third time of ploughing and hoeing is saved.

The foregoing is very respectfully submitted by the Committee's very humble servant.

JON. HUNNEWELL.

I hereby certify, that I have surveyed a piece of land on the farm of Jon. Hunnewell, Esq. of Newton, estimated by Mr. Thompson, his foreman, for an acre, and find that it *does not exceed one acre.*

ROBERT MURDOCK, *Surveyor.*

Newton, Nov. 18, 1820.

I hereby certify, that the above named piece of land is the same, and all the land which I estimated for an acre, and from which I and other named in a certificate given for that purpose, certified we gathered one hundred and eleven bushels of corn from.

JOSEPH THOMPSON.

Newton, Nov. 18, 1820.

Middlesex, ss. November 10, 1820. Personally appeared Joseph Thompson, and made oath that the foregoing certificate by him subscribed is true. Before me,

TYLER BIGELOW, *Justice Peace.*

Boston, Nov. 22, 1820.

SIR—I am happy to have it in my power to offer to the honourable committee that sort of evidence which is required of the production of one acre of land cultivated by me this year on my farm at Newton. Inclosed are the certificates, as also the statement of the kind of soil and manner of cultivation. Which is respectfully submitted by your humble servant. J. HUNNEWELL.

Newton, October 20, 1820.

We, the subscribers, hereby certify, that we planted a piece of corn for Jon. Hunnewell, Esq. on his ground lying in Brighton; that we have cultivated and taken care of the same for him during the season, and did, on Saturday the 14th day of October, measure off very accurately one acre of said corn, gathered the same acre and husked it, and with great care measured the same, and kept an exact account of the number of bushels of ears it afforded, which was two hundred and twenty-two bushels and one half; and we are satisfied there is one hundred and eleven bushels of corn, which was raised on one acre of ground.

JOSEPH THOMPSON,
ABEL BAKER,
EZRA BAKER,
DAVID SPAULDING.

Further testimony shall be given, if required, as also the mode of culture, by yours respectfully.

JON. HUNNEWELL.

Worcester, Oct. 14*th*, 1820.

[To the Committee of Agricultural Improvements, of the Massachusetts Agricultural Society.]

GENTLEMEN,

THE following is the result of an experiment made upon an acre of land, planted, one half in hills, and the other, in rows.

The above parcels of land comprised a field of uniform quality, bordered with three rows of potatoes, which was ploughed late in the summer of 1817, after taking off a crop of hay, and sowed upon the furrow with winter rye. It produced twenty-five bushels. The stubble was then ploughed in, and the ground sowed with turnip seed. The season being indifferent, it produced but about sixty bushels, with a profusion of verdure from the scattered grain. Late in the autumn I carried on about one hundred loads of rich earth from about my yard and barn, part of which had in a succession of years, been washed from my field, and a part from an excavation of ground, on which I was preparing to remove my barn. This was spread and ploughed in. In 1819 I sowed it with wheat, which produced an abundant crop of straw, with only fifteen bushels of shrivelled grain. I turned in the stubble, and again sowed it with turnip seed. The season being more favourable, I raised from it one hundred and sixty bushels. Intending to plant it with corn the next year, I carried on to the margin of the field about forty loads of compost manure. Early in May last, I gave it a deep ploughing, and cross furrowed it for planting, at intervals of four feet. The furrows were made six inches in depth. Being confident that the drill method of planting was the best, I had determined to have planted the whole field in this manner—but the man I had employed, mistaking my direction, had dropped a few loads in the mode for planting in hills, before I went to the field. As it would occasion additional labour to repair the error, I directed him to finish one half the field in this manner, and to spread the manure in the rows in the other half. I could then ascertain which was the best mode of planting. This accident, Gentlemen, brought me within the scope of one of your items for an experiment in agriculture, which then I had not noticed. I had two men at my cart, and employed one in covering the corn, which I principally placed myself, five kernels in a hill, placing four in a square, six inches apart, and the fifth in the centre, pressing

them into the manure. The hill when finished was nearly level with the ground. A row of hills contained two hundred and ten kernels. The planting was performed as near to the manuring as possible to prevent the drying and evaporation of the manure.

As nearly the same amount as could be judged, was spread in the rows, and the corn planted on the surface in a zig-zag course, crossing from side to side of a straight line, about three inches and at ten inches apart. When this was covered, there was a depression upon the surface of the furrow of about two inches, as the manure was more shallow in the rows than in the hills. Both parcels were planted on the 8th of May. At the time of planting, the ground was uncommonly dry and dusty for the season—but before the corn had time to vegetate, there was a succession of cold, heavy rains, which retarded its progress, and gave it an unpromising appearance, especially in the rows where the seed was more exposed to the wet, and less to the sun. Many stalks were missing. Making no calculation for accidents in the part which I personly planted, my crop in the rows, would have been much lessened, had not a small boy, who dropped the corn in a few rows in my absence, furnished me with the means of supplying the defect. From his *nursery*, I carefully transplanted with a trowell, a sufficient quantity to make the rows complete—amounting to at least two hundred plants. For some time after the first leaves had expanded, the corn throughout the whole field appeared almost stationary ; but there was a perceptible difference in favour of that in the hill. Before weeding, I dressed it with ashes, allowing an equal quantity to each parcel—about a gill to each hill. I back-furrowed it, and left the rows more accessible to the sun; and loosened the earth between the hills, and among the rows, particularly about the corn, raising no more earth about it than was necessary to cover the ashes. This gave it a better colour and a more healthful appearance—still it retained its dwarfish state. Instead of the blade pushing up, it began to send out

suckers, like a diseased tree, more vigorous than itself. They were removed when they were from four to six inches high, and so slender as to yield to slight force. In some cases, I preferred the sucker to the stalk, and severed the latter—in some, I pulled up both. This was the most judicious course, where the original stalk is unpromising, as a sucker rarely produces fruit. In about a fortnight from the first hoeing, I gave it a second, previously putting about it the like quantity of ashes. I laid the furrow toward the corn, hoeing as before, and raising earth about the corn, enough only to cover the ashes; stirring the ground, and levelling the furrows to a smooth surface, leaving the earth flat and broad about the hill, and about four inches elevated—and in the rows, a flat surface of a foot on each side of the blade, a little more depressed than in the hills. In a few days after this process, I applied plaster, as I had ashes, and in about the same quantity. This was the last ploughing and hoeing, except a light stirring with the hoe to loosen the earth, and destroy a few remaining weeds. The corn in the whole field remained short, but grew *stocky*, and began to tassel at from fifteen to eighteen inches high. Many who viewed the field, judged that its appearance indicated a small crop—but from the commencement of the tasselling it grew vigorously—set abundantly for ears, in both hills and rows; and attained an early stature of six to eight feet throughout the field. The stalks were cut after the corn had become hard, and the inner husk a little dry. The field was measured, and the corn gathered on the second day of October. The produce from the half acre in rows was twenty eight and a half double bushels of ears. That in hills, produced twenty-three and a half double bushels, giving five double bushels of ears in favour of the half acre planted in rows; and making the whole produce of the acre fifty-two bushels of shelled corn. Difference in the expense of labour in the two parcels, not exceeding seventy-five cents.

Respectfully, your obedient servant,

O. FISKE.

Expence of cultivation, viz.:—

Ploughing, man, oxen and plough,	$1 25
Furrowing, horse, &c.	50
Manuring,	1 34
Planting,	87½
Ploughing and hoeing,	2 75
Harvesting,	2 87½
	$9 59

I Nathan Shepard, testify and say, that I have worked in the employment of O. Fiske, Esq. from April last, and that the facts stated by him, as having taken place since I have been in his employ, are true. I further testify, that I assisted in harvesting the two parcels of corn, as measured by the Surveyor—that I carefully measured the produce of each parcel—and that their several amount is as above stated.

NATHAN SHEPARD.

Worcester, Oct. 14, 1820.

Worcester, ss. Oct. 16, 1820.—Then the above named Oliver Fiske and Nathan Shepard, personally appeared, and made oath to the truth of the above certificates, as by them severally subscribed. Before me,

WILLIAM JENISON, *Justice of the Peace.*

I certify, that the above named Nathan Shepard, is a man of truth, and his certificate is entitled to credit with all persons.

WILLIAM JENISON.

I hereby certify that on this second day of October, 1820, I measured a part of a field belonging to Oliver Fiske, Esq. on which Corn grew this year, planted in rows, which part appeared to lie at right angles, and the rows uniform; this part as near as I could estimate by the chain, contained eighty rods, being half an acre. I also measured, and laid off from

the adjoining section, what I found to be an equivalent ammount, of ground on which Corn grew this year, planted in hills. JEREMIAH ROBINSON, *Surveyor.*

I hereby certify, that I assisted Dr. Robinson in measuring the above mentioned separate parcels of ground, and that I on the same day carted the Corn from the ground as measured, and deposited each parcel by itself, in two apartments in Dr. Fiske's barn. JAMES WILLIAMS.

Worcester, ss. October 16, 1820.—Then the above named Jeremiah Robinson and James Williams, personally appeared, and made oath to the truth of their respective certificates as above signed, before me.

WILLIAM JENISON, *Justice of the Peace.*

I certify that the above named Dr. Robinson and James Williams, are men of truth, and their affidavits are entitled to credit with all persons.

WILLIAM JENISON.

Remarks and illustrations, as an Appendix to the within paper. My seed was from an ear of corn given me by Abraham Bigelow, Esq. of Cambridge, as an early kind, with a small stalk and cob, yielding a good crop, with less exhaustion of the land than the kind in general use. It has eight rows and its full length where I first received it was about eight inches. I raised my seed first from this in 1815. In 1816, a year peculiarly disastrous to corn, I planted half an acre from this seed, and an acre in a more favourable aspect, with our common eight rowed kind. The first came to maturity, the latter was cut off in the milk. I gave public notice of my success and sold or exchanged the seed at the rate of other corn. A thousand bushels would not have supplied the demand from this and the neighbouring states. It is now I believe generally used. It probably

originated from a more northern climate. Its dimensions are increased without materially losing its early quality. Twelve inches is not an uncommon length.

You will perceive, gentlemen, by the within statement, that I have not adopted the common practice of *late hoeing and hilling* corn—both of which I consider as extremely detrimental. The former disturbs and severs the roots which are in quest of food—and the other removes the food to a point, in the course of nature, inaccessible to them—forming a fulcrum over which the corn will break—or into which it will be imbedded in a conjunction of wind and rain without the power of *self erection*. My field was twice exposed to this occurrence and stood in all points of elevation from a horizontal line to an angle of 45°, with little injury to the corn, and little trouble in righting it.

The seed was soaked in strong brine 36 hours before planting. The stinted state of the corn in its early stage, I impute to the wet and cold which succeeded the planting. I rarely plant earlier than the 20th of May—but as the ground was becoming very dry, I hastened the planting, fearing so great a drowth as would prevent the seed from vegetating. Having published a theory on which I practised in the management of corn, I left four rows to the *course of nature*, that I might determine whether *suckering* corn was useful, as I contended. In these four rows there were seventeen stalks more than in four rows contiguous which had been suckered, and the produce was half a peck less.

The whole field was more infested with smut, than any which I have before noticed in any season, and more than I have seen the present year in any other field. Whether this was occasioned by a vitiated state of the fluid, arising from the insalubrity of the early part of the season—or from its *excess* in the latter, I am unable to determine—but I am inclined to the latter opinion from the consideration, that at the period for forming and filling the ear, the season was uncommonly favourable to vegetation, and the process was pressed with uncommon rapidity. Hence I infer that the

sap in its crude state, flowed faster to the ear than could be assimilated and purified into grain, and expanded in smut. This excess would probably be greater where vegetation had been checked, as in my field in the early part of the season. If my theory be correct, the reason is obvious why my corn was more smutty than that of my neighbours, who planted later, and where its progress was uninterrupted.

Incidentally in the above experiment, I have ascertained, that corn may be transplanted without injury. Care however ought to be taken in planting to allow for accidents, as it is better to pull up the surplus, than to supply a defect by transplanting or replanting—the latter I should never practice, unless the field was so generally and so early destroyed as that it would do to replant the whole—as I never knew a field succeed well, intermixed with *early* and *late* planting. You will observe gentlemen, that my mode of *planting* in the *hill* gave as much advantage to this culture as possible. I intended to have had the same number of kernels in the rows as in the hills—but I found they rather fell a little short—still I think it stood as thick as would be profitable, as I observed those stalks produced the best, which had the most space.

O. FISKE.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN.—In entering the lists of competition for your premiums on agricultural products, I deem it necessary to state that the land in which one acre of potatoes were raised (and entered at Brighton, October 16th 1820,) the present year, was broken up in October, 1819. The two years previous, had been used as part of a sheep pasture, on which the sheep were folded at night. The situation of the land, is near the foot of a heavy swell, and is gently in-

clining to the east, the soil a dark yellowish loam, such as we call chesnut land. In the spring of 1820, the land was cross-ploughed and harrowed, and between the 21st and 27th of May, the crop was put in, in the following manner. Six furrows were cut lengthwise the piece, (as owing to the local situation of the land, the whole manure had to be carried across the field in various directions, which will account for six furrows at a time only.) The manure, (which in quantity, was about 37 loads, and in quality, that made from neat cattle and sheep, the 20 loads from sheep was ¾ straw, their winter litter) spread in, and the cut potatoes planted one foot apart, the horse plough then followed, throwing the loam on the manure and potatoes; this again followed by the hand hoe to dress down, or add the loam, which completes the process in about half the time and much better, likewise, than the same entirely performed with the hoe.

In ten days the weeding commenced by running the horse-plough as near the manure as possible, throwing the loam in a ridge between the rows (which were 3 feet apart) following with the hoe to dress the plants. About the 22d June, the ridges were split with the horse-plough, throwing an equal quantity of the same to each row, followed with the hoe as above. The vines at this time were not more than 8 inches in height and not yet in the bud. From this time, the field was not entered till harvest which commenced the 23d October and on finishing the same, had by admeasurement, six hundred and fourteen bushels.

The seed used, was forty bushels, part the Rio-de-la-Plate reds, and the remainder the Fitchburg whites. The reds gave a superior yield on a like quantity of land in the proportion of six in eleven, in bushels, but the whites were five pounds in a bushel the heaviest.

I would here observe (with much deference to the opinion of more experienced farmers) that as the present season has been too hot and dry for potatoes, I think 700 bushels can be produced from the acre in this country in

our best seasons, for the successful culture of this valuable root.

The land on which I raised one acre of wheat, the present season (as entered at Brighton, October 16th, 1820,) was in 1819, occupied with a crop of Indian corn, manured at the rate of 20 buck loads to the acre, ploughed in. After taking off the crop in the fall, the land was coarsely ploughed. In the spring of 1820, the land was cross-ploughed and on the 18th of April, after the seed had been soaked in brine, the strength of sea water, thirty-four hours, drained, and a sufficient quantity of wood ashes, mixed with it, was sowed at the rate of 3 bushels to the acre, (which, experience declares to be one sixth part too much,) and harrowed in across the furrow, following with the grass seed, which was again cross-harrowed and left in this situation till about the middle of July, the crop then harvested and when threshed and cleaned measured nineteen bushels.

It is perhaps unnecessary to observe, that owing to the intense *heat* and *drought*, of the season, crops of wheat in this part of the country have been comparatively small with former years: this together with the inauspicious visit of a squall of hail, (before the grain was ripe, which broke one half of it down) will account for the small crop above.

Expence arising from the culture of one acre of potatoes in the year 1820.

Breaking up - - - - - - - - - -	$5,00
Cross-ploughing and all other labour in planting	12,00
37 buck loads manure - - - - - -	37,00
40 bushels potatoes, at 25 cts. - - -	10,00
2 hoeings - - - - - - - - - -	8,00
harvesting the crop, 1 man 20 days at 75 cts. -	15,00
	$87,00

PAYSON WILLIAMS.
AARON BIXBY.

Worcester, ss. November, 8th, 1820. Personally appeared Payson Williams, and Aaron Bixby, and made oath, that the foregoing statement subscribed by the said Payson Williams, and the said Aaron Bixby, contains the truth,

Before me,

CALVIN WILLARD, *Justice of the Peace.*

This is to certify that I, Philip F. Cowdin, being sworn surveyor of the town of Fitchburg, in the county of Worcester, have this day surveyed a certain piece of potatoes, for Payson Williams, of Fitchburg, in the town and county aforesaid, and find the same to contain one acre and no more.

PHILIP F. COWDIN.

Fitchburg, September 28th, 1820.

This is to certify that I, Philip F. Cowdin, being sworn surveyor of the town of Fitchburg, in the county of Worcester, have this day, surveyed a certain piece of ground, sown this present season, with spring wheat, for Payson Williams, of Fitchburg, in the town and county aforesaid, and find it to contain one acre, and no more.

PHILIP F. COWDIN.

Fitchburg, September 28th, 1820.

Jamaica Plain, 20th Nov. 1820.

[To the Committee on Agricultural Experiments.]

GENTLEMEN,

HAVING the last year addressed a note to the Secretary of the Society on the subject of the culture of *Mangel Wurtzel,* of which vegetable I had just been raising a small patch—and from the high opinion I therein expressed of its value, I

thought it my duty to attempt its cultivation this year on a larger scale, having procured fresh seed from Holland. I now beg leave to give you the result.

The land used for the purpose had been for four years chiefly cultivated with carrots—is a deep light loam on a dry gravel bottom,—and on the same spot are upwards of fifty apple and pear trees, of 10 to 15 years old. This year about 24 ox-cart loads of compost manure were used; on part of the land it was spread and ploughed in, and on part it was put in the furrow under the seed—the whole was thrown in ridges with the double mould board plough, about two and a half feet apart, then flatted a little, and the seed put in, with the fingers, at six inches apart. They were afterwards thinned to a single plant, and after they had attained considerable size, every other one was taken up and used as food for my hogs, being boiled. They were hilled with the double mould board plough, and hoed alternately three or four times during the season.

I am well convinced the whole labour on them was fully paid by the trimmings and thinnings, which my people all estimated, including those pulled within six weeks of harvesting, at not less than one hundred and fifty bushels of roots.

In the month of July the season was so dry, I feared I should almost lose my crop by drought. I think a soil naturally more moist would have been better for them. I am, however, well satisfied with the result. On the 12th of October we commenced taking them up, first cutting the tops and carting them off to the oxen and cows, the roots were then pulled, and on the 14th the whole were housed or pitted at an expence of less than ten days works on 504 baskets—24 of which I myself weighed, the average of which was 75 21-26 lb. net—and calculating, by the society's rule of 56 lb. per bushel the produce *then gathered* was 682 bushels from 1 acre and 2 rods, as appears by the surveyor's certificate, herewith handed. There being no hay-scales within three miles and not wishing to market any of these roots, I

thought the trouble too much to send them, and presumed the Committee would be satisfied with the weight as above expressed.

It must be observed that allowing 10 days labour in harvesting, each man must have got in 68 bushels in one day's work, four times as much as that of harvesting potatoes. All sorts of stock are fond of them, much more so than of *Ruta Baga*, and they are, I think, a more certain crop, having fewer enemies to encounter. They are not, however, so easy to keep through the winter. I last year kept (in a pit) in the field those intended for seed, which did remarkably well,—and this year I have pitted 200 bushels, by digging a trench 3½ feet wide and about 1 foot deep, putting a layer of straw on the bottom and piling them about 3 feet high, and covering them with straw five or six inches deep, and then covered 6 or 8 inches with the soil taken from the trench—observing not to cover them too thick, till the weather becomes quite cold.

On three square rods of the above ground an average of 1800 bushels per acre was produced. The seed was planted the 28th of April.

I am, very respectfully, yours,

JOHN PRINCE.

N. B. I have this fall procured a double mould board plough and horse hoe with circular cutters—the mould board and hoes are expanding, and can be worked in rows of any width from 18 inches to 3 feet apart, with this implement, in a free easy soil, I think the *hand hoe* will not be much required.

Roxbury, Nov. 20th, 1820.

I Mather Withington, of Dorchester, a sworn surveyor, having been requested therefor by John Prince, Esq. of said Roxbury, hereby certify, that I have this day surveyed a piece of ground on which, as had been stated by him, a crop

of Mangel Wurtzel had recently been taken, and find it to measure one acre and two rods. I also found on the said ground forty-nine pear and apple trees, from ten to twenty feet in height—also within one foot, on the eastern border, eighteen other trees, of apple and pear, of like height.

MATHER WITHINGTON, *Surveyor.*

Roxbury, 28th Nov. 1820.

We the subscribers hereby certify and declare, that we have worked on the farm of John Prince, Esq. during the whole of the past summer, that we have assisted in cultivating a piece of ground with Mangel Wurtzel, that we have seen the statement made by Mr. Prince of the culture thereof and the produce, and that so far as relates to the labour of *this year*, the manure, the produce and weight of the same, we can attest to the accuracy thereof.

EPHRAIM DOWNES.
LEONARD NEWTON.

Norfolk, ss. Roxbury, Nov. 28th, 1820. Then the above-named Ephraim Downes and Leonard Newton appeared, and solemnly swore to the truth of the above by them signed. Before me,

JOHN PARKER, *Justice of the Peace.*

Brighton, Nov. 8, 1820.

An account of the culture and produce of one acre of Cabbages by Francis Winship, of Brighton, in the county of Middlesex: The land on which the Cabbages grew, is the same on which the ploughing-match took place in the year 1817, was cultivated with corn and potatoes in the year 1818, and with potatoes in the year 1819. The last spring it was

ploughed once. In June it was ploughed again, and struck into furrows from 2½ to 3 feet apart. I then dropped leached ashes into the furrows, one shovel full making three or four hills 15 or 20 inches apart, it was then mixed with the loam and covered; a boy followed with the seed, and penetrated the hill with his thumb and finger, and deposited three or four seeds. This was performed the latter part of June. They were afterwards weeded and thinned as convenience suited, probably equal to three dressings. On the 8th of the present month Mr. Tufts surveyed the land, and ascertained that there was one acre of the same kind, he then set off one eighth part of an acre, pointed the same out to myself and my man Mr. Pierce. It was taken from the centre and considered a fair average of the acre. From this eighth of an acre we ascertained that forty of the heads had been taken away by the market man,—we therefore selected forty cabbages from the neighbouring rows, and put the same to the produce of an eighth of an acre. They were then taken (making three loads) to the scales, and weighed, as appears by the weighers ticket, eighty hundred and one quarter,—this multiplied by eight makes thirty-two tons and two hundred.

FRANCIS WINSHIP.

Brighton, 9th Nov. 1820.

Three loads Cabbages, owned by Francis Winship, driven by Mr. Peirce, weight - - - - - - - - - 118 1

Tare - - - - - - - - - 38 0

Nt. Wt. - - - - - - - - 80 1

SAMUEL DUDLEY, } *Weighers.*
OTIS FAY, }

Brighton, Nov. 9, 1820.

This is to certify that I have lived with Francis Winship the summer past, and assisted in the cultivation, collection, and weighing, and was present when Mr. Tufts surveyed and

pointed out the above eighth part of an acre of cabbages, and the above statement is correct and true.

HIRAM PEIRCE.

Brighton, 8th Nov. 1820.

This will certify that I surveyed this day a piece of cabbages for Francis Winship, of Brighton. I first ascertained that there was as much as one acre of the same kind of drumhead cabbages. I then pointed out to him, and his man, one eighth of an acre to be weighed.

PETER TUFTS, Jr. *Surveyor.*

Middlesex, ss. Brighton, Nov. 29, 1820. Then personally appeared the above-named Francis Winship and Hiram Peirce, and made oath that the above certificates by them subscribed is true, before me.

EDWARD SPARHAWK, *Justice Peace.*

We, Ebenezer Thrasher, husbandman, Moses Cricket, and David Trasher, all of Salem, in the county of Essex, on oath testify as follows,—

That sixteen tons and thirteen hundred weight, together with one hundred and eighty three bushels more, of Carrots were raised on an acre of the farm in said Salem, occupied by the above named Ebenezer Thrasher, the same acre measured in our presence by Mr. Jona. P. Saunders, surveyor; and we know the above quantities were dug on said acre, from time to time, from the 6th November last, to the 14th December inst.: we all assisted in digging the same.

The weight of all said Carrots, except of the one hundred and eighty three bushels, was ascertained by E. W. Fabens, Town Weigher.

EBENEZER THRASHER.
DAVID THRASHER.
MOSES CRITCHET.

COMMONWEALTH OF MASSACHUSETTS.

Essex, ss. December 14, 1820. Then the abovenamed Ebenezer Thrasher, Moses Critchet, and David Thrasher, severally subscribed and made oath to the truth of the above affidavit, before

BENJAMIN MERRILL, *Justice Peace.*

The words "one hundred and eighty three," were interlined before signing and taking the oath.

B. MERRILL, *Justice Peace.*

Salem, Dec. 14, 1820.

This is to certify, that I, the subscriber, have cultivated the land on which I raised an acre of Carrots, the past season, as follows: May 1, carted three and a half cords manure and spread the same—10th, ploughed it—11th, harrowed it—12th, carted on three cords manure—13th, harrowed it again—17th, ploughed it—18th, raked it over—19th and 20th, sowed it with three pounds of carrot seed, and three pounds radish seed—June 8th, hoed the same between each row, the distance between the rows being seventeen inches—15th, hoed and weeded the same—29th hoed the same again—July 10th, hoed and weeded the same for the last time; the above being all the manure and labour done on the above land during the season. EBENEZER THRASHER.

This certifies that drafts of Carrots weighed as follows, belonging to Mr. Ebenezer Thrasher, of Salem.

Nov. 6, 1820.	GROSS.			TARE.			NEAT.		
Horse Cart,	18	3	16	5	0	23	13	2	21
	18	1	2	5	1	16	12	3	14
	19	2	16	5	1	16	14	1	0
9th,	16	0	16	5	1	16	10	3	0
Horse Waggon,	19	2	2	5	0	23	14	1	7
	17	2	2	5	1	16	11	0	14
17th,	14	3	2	5	2	2	9	1	0
24,	17	3	2	5	2	16	12	0	14
	18	3	16	5	2	16	12	1	0

	GROSS.			TARE.			NEAT.		
25,	18	1	2	5	2	16	12	2	14
	11	1	9	5	0	23	6	0	14
27,	16	1	16	5	0	23	11	0	21
	18	1	9	5	0	23	13	0	14
	17	0	23	5	2	2	11	1	21
Dec. 4,	17	3	16	5	2	16	12	1	0
6,	15	0	2	5	2	2	9	2	0
8,	17	0	23	4	0	23	12	0	0
	17	2	16	5	2	16	12	0	0
	17	2	2	5	0	23	12	1	7
9,	17	2	2	5	2	16	11	3	14
	12	2	2	5	2	2	7	0	0
	17	3	16	5	0	23	12	2	21
	16	1	2	5	1	16	10	3	14
14,	18	1	2	5	2	16	12	2	14
	18	2	2	5	0	23	13	1	7
	18	2	16	5	2	16	13	0	0
	19	2	16	5	0	23	14	1	21
	17	0	16	5	1	16	11	3	0
						Cwt.	333	0	0

A true copy. Attest.

E. W. FABENS, *Weigher.*

Salem, Dec. 14, 1820.

Salem, 6th November, 1820.

I hereby certify, that at the request of Mr. Ebenezer Thrasher, I measured a piece of land in South Salem, and staked off as part thereof, *one acre*, the same having Carrots thereon.

JONATHAN P. SAUNDERS,
Sworn Surveyor.

Salem, December 14, 1820.

This is to certify, that we have raised on the land on which we raised an acre of beets the past season, eleven hundred dozen of radishes, according to the best of our knowledge.

Also, on the land on which we raised an acre of Carrots, we also raised sixteen hundred dozen of Radishes, according to the best of our knowledge.

EBENEZER THRASHER.
DAVID THRASHER.

We, Moses Critchet and David Thrasher, resident at Salem, in the County of Essex, husbandmen, severally on oath testify :

That the said David wrought in the employment of Ebenezer Thrasher, of Salem, on the farm in Salem, occupied for several years past by said Ebenezer, and said David was present and assisted during the months of August, September and October last, in digging and putting into barrels the crop of Beets raised on one acre of his farm, the same surveyed by Mr. Jonathan P. Saunders; and the said David knows, that three hundred and twenty-three barrels of Beets were in said months raised on said acre of ground, which he assisted in digging and barrelling—twenty-five barrels of the same were dug and sold in August; of which I informed Critchet.

The said Critchet declares he began to work for said Ebenezer, in September last; that part of the Beets growing on said acre had then been dug and carried away; that he was informed twenty-five barrels had been dug, which he believes to be true; that in September and October last, he assisted the said Ebenezer and David in digging and barrelling two hundred and ninety-eight barrels, the residue then on said acre, and he has no doubt the whole must have been three hundred and twenty-three barrels.

DAVID THRASHER.
MOSES CRITCHET.

I, Ebenezer Thrasher, of Salem aforesaid, husbandman, on oath testify,

That I raised, dug and barrelled during the months of September, August and October last, on one acre of the farm I occupy in Salem, the same acre surveyed by Jonathan P. Saunders, three hundred and twenty-three barrels of Beets.

EBENEZER THRASHER.

COMMONWEALTH OF MASSACHUSETTS.

Essex, *ss. November* 29, 1820.—Then the abovenamed Ebenezer Thrasher, David Thrasher, and Moses Critchet, severally subscribed and made oath to the several aforewritten affidavits, by them respectively subscribed.

Before me,

BENJAMIN MERRILL, *Justice of the Peace.*

Salem, *December* 14, 1820.

This is to certify that I, the subscriber have cultivated the land on which I raised an acre of Beets, the past season as follows:—April 10th, I begun to cart manure on the land—I carted and spread 4 cords. 18th, ploughed the land. 19th, harrowed the same. 29th, carted four cords more of manure and spread the same. May 4th, ploughed it again. 5th, harrowed the same. 8th, ploughed it over again. 9th, raked it over and sowed it with six pounds of seed (Beet) and four pounds of Radish seed. June 1st, hoed the same between each row, the distance between the rows, being two feet. 9th, hoed the same again. 12th, weeded the same. 28th, hoed through again. July 3d, hoed and weeded again the above, being all the manure and all the labour that was done on the above named land during the season.

EBENEZER THRASHER.

Salem, *August*, 1820.

I hereby certify, that, at the request of Mr. Ebenezer Thrasher I measured a piece of land in South Salem, and set off therefrom one acre, having thereon Beets—growing.

JONATHAN P. SAUNDERS,
Sworn Surveyor.

Salem, 18th December, 1820.

DEAR SIR,

I received yours this morning, and seeing Mr. Thrasher, he furnished me the inclosed Certificates.

It is always the practice to top both Beets and Carrots before weighing. I saw him pack and weigh the barrel of Beets, and he assures me, they would have weighed much more when they were first taken from the earth. Estimating a bushel to weigh 56 lbs. a barrel contains 3lbs. short of 2 1-2 bushels. I think a bushel just dug would weigh over 60 lbs.

I am yours, with great respect,

E. HERSEY DERBY.

THOMAS L. WINTHROP, ESQ.

I hereby certify that I weighed one barrel of the Beets, packed in the same manner as I packed the others, that it weighed 156 lbs., the barrel 19 lbs.; the neat weight of Beets being 137 lbs.;—and I have no doubt had I have weighed all the others they would have contained an equal weight of Beets. DAVID THRASHER.

I hereby certify, that all the Carrots were toped before they were sent to the town scales.

DAVID THRASHER.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN.—The following statement is made in consequence of my application for your premium, on a crop of the common English turnip; but it is unfortunate for me, I cannot give you the total amount of the crop. The selection of this tract for turnips was, in part, its adjoining the road and in full view of the public, to induce them to aban-

don the practice of sowing broadcast, and sow them in rows, as was my practice; but upon measurement it was found to contain one acre within the fences, which, the head-lands not being ploughed, left not one acre actually sowed. The situation of the land being low and flat on the clay (as we term it) and my neglecting harvesting till the beginning of November, the early snows and frost have prevented me from finishing; but we have gathered and measured four hundred and twenty bushels from one hundred rods, the remaining I must feed off with my stock when permitted. My mode of culture is as follows;—The middle of July I ploughed my ground, which had been mown a few days before, and had been down to grass for ten years, and cut about three-fourths, of a ton to the acre. Then I drew on eight cords of manure, which was a composition of marsh mud and manure, made by my flock of sheep, which I spread on and harrowed in; then I shallow-ploughed it in small ridges, then with a machine I sowed two rows on a ridge, and covered it with a light harrow. The rows were two feet apart between the ridges, and one foot on the ridge, which took half a pound of seed. I thinned them to the distance of one foot apart; the first of August I ploughed and hoed them; I hoed them again the latter part of the same month. The whole expense of labour of ploughing and sowing, and thinning, hoeing, &c. do not amount to more than fourteen days works, including harvesting.

P. S. I have stated above, that I sowed my turnips the middle of July. There were twenty rods on one side that I omitted sowing till August, which were so late that the September drought injured materially. Respectfully yours,

TRISTRAM LITTLE, *Owner.*
HENRY TANDAY, *Assistant.*

BENJAMIN GUILD, Esq.

Newbury, Nov. 29, 1820.

If requested, I would give you the statement of the crop, and of the measure of the land, under oath.

TRISTRAM LITTLE.

Newbury, Dec. 25, 1820.

Mr. Thomas L. Winthrop,

Sir,—In answer to yours of the 16th instant, respecting my turnip crop, I shall state to you that they were completely topped, as we term it, or, in other words, they were fit for the market, as a part of them were sold in Newport market, and a part was sold on the ground, and the purchaser trimmed or topped them to his fancy, and the remainder I put in my cellars for the use of my stock. The following certificates are those requested. I am respectfully your obedient servant. TRISTRAM LITTLE.

These may certify, that we assisted T. Little in harvesting his crop of turnips, and we saw four hundred and twenty bushels measured from a part of his ground.

HENRY LITTLE,
HENRY TANDAY.

Essex, ss. December 25, 1820. The above named Henry Little and Henry Tanday made oath to the truth of the above certificate by them subscribed before me

EBEN. MARCH, *Justice of the Peace.*

This may certify, that I have measured a piece of land for Tristram Little, from which he says he gathered four hundred and twenty bushels of turnips, and it contains one hundred rods, and no more; it was a part of the ground sowed with turnip, which he entered for your premium.

EBEN. MARCH, Jr.

Essex, Dec. 25th, 1820. Then the above named Ebenezer March, Jr. made oath to the truth of the above certificate by him subscribed before me

EBEN. MARCH, *Justice of the Peace.*

This may certify, that I passed through Mr. Tristram Little's field, at the time that he was harvesting his turnips, and saw a cart load standing there, which was represented to contain forty-two bushels, and gathered from a piece of ground which I assisted in measuring at that time, which did not exceed eight rods. I have no doubt as to the correctness of facts above stated. DAVID LITTLE.

Boston, Jan. 27, 1821.

[To Dr. Dexter, President of the Massachusetts Agricultural Society.]

SIR,

ALTHOUGH I am sensible, that horticulture forms but a comparatively small branch of the duties of an Agricultural Society, and is entitled to a very inferior degree of attention, yet it is not to be entirely overlooked. It is with these views, that I communicate to you my experiments of the cultivation of the sweet potatoe of Carolina, a name by which it is more generally known, though the plant is not an indigenous or native one of that State. The eagerness with which it is sought when imported from the southern states, and the high price paid for it, are sufficient proofs that it is a valuable addition to the luxuries of our tables. The price we pay for it ordinarily is at least equal to three times its first cost, it being sold in the Charleston market from fifty to seventy-five cents per bushel, while it ordinarily costs us from 150 cents to two dollars.

I had heard of the successful cultivation of this plant at Plymouth, in this State, by Mr. Davis, the father of several of our most respectable citizens; and I always believed, that a little attention would enable us to naturalize it in our climate, as it is well known that it has for a long time been successfully cultivated in the State of New Jersey.

The complete success which attended the cultivation of it in 1819, by some of us, from your distribution of slips of the

plant received from Colonel Haskell of South Carolina, induced me to import a bushel of the slips the last spring from New Jersey, under the belief that, having been in some degree accommodated to a more northern climate, it would more readily flourish and produce perfect roots or tubers with us.*

I accordingly planted it the last spring on about a 20th part of an acre, and it succeeded far beyond my most sanguine hopes; so much so, that I can without any hesitation venture to assert, that 300 bushels per acre may be easily raised. What is of more importance, I can assure the public, that in point of quality and sweetness, the potatoes were at least equal to the best ever imported from more southern climates. The season was, however, unusually favourable; and I do not mean to intimate, that the success will always be as great. I am inclined to think, that the plants should always be started in hotbeds, as they require an unusual length of time before they appear above the ground. I dare say no more upon the credit of two successive experiments, but after another trial I hope to be able to point out the best mode of culture of this valuable root. Yours respectfully,

J. LOWELL.

Salem, January 22, 1821.

[To the Corresponding Secretary.]

DEAR SIR,

HAVING adopted a mode of managing my tillage lands for two years past, which has been attended with considerable success, I wish, through the medium of the society, if thought worthy of publication, to communicate the result of it to the agricultural community.

My farm, like most others in Massachusetts, consists mostly of upland and swamp and meadow lands. Instead of spread-

* I had the roots for six weeks successively on my table, in the highest perfection and in abundant quantities.

ing gravel on the meadow lands, as has been customary, I have drained the meadows, carted the mud from them to the upland, spread it from four to six inches thick, and ploughed it in. The effect, on a gravelly knoll, which has been very slightly manured for several years past, and on which corn was planted in 1819 before the mud was applied, was, that in 1820, after the mud was spread and ploughed in, but with similar management in other respects, three times as much corn was produced as the same land bore in 1819. On a piece of hilly pasture land, with a gravelly soil, first broken up about three years since, I raised, in 1820, a crop of potatoes, eight hills of which, on an average, in a high part of it, where the mud had been plentifully spread and ploughed in, produced a bushel, when, in the other parts, from twelve to twenty hills were required for a bushel, although a small quantity of mud and slacked lime had been ploughed into the whole piece, and my men had deposited mud taken from the barn yard and barn cellar in all the hills as manure; but this latter application appears to have had very little effect, probably from the mud not being mixed with the other ingredients of the soil.

To all persons, who have attended to agriculture as a science, it is well known, how necessary due proportions of silex, alumine and vegetable matter, in a mixed state, are to the existence of a vigorous vegetation. Soils thus constituted are particularly well calculated to acquire and retain moisture from rains and "atmospheric absorption." The properties favourable to vegetation, acquired by the land, must be of great durability also, unless from the form of the land, the fine particles be washed from it by rains, &c. Another advantage is, that whether the meadow be deep or shallow, much more arable land is produced than by the common method. If the meadow be deep, vastly more tillage land is obtained with the same amount of labour, as the gravel when spread in the common mode is continually sinking into the soil of the meadow; and if the meadow be

shallow, by draining it and removing all the mud which can conveniently be taken, a sufficient quantity will still remain to be ploughed into the gravelly sub-soil, and good tillage land thus be produced; and many of our swamp and meadow lands are capable of being easily drained sufficiently for this purpose.

Perhaps it is proper to state, that I have carted the mud to the upland in the fall, that it might be hove by the frost in winter. It is much more easily pulverized in consequence in the spring.

I will only add an extract from a late publication on agriculture. "In supplying animal or vegetable manure, a temporary food only is provided for plants, which is in all cases exhausted by a certain number of crops; but when a soil is rendered of the best possible constitution or texture, with regard to its earthy parts, its fertility may be considered as permanently established. It becomes capable of attracting a very large proportion of vegetable nourishment from the atmosphere, and of producing its crops with comparatively little labour and expense."

I trust it will be understood, that I have applied the mud only in cases, where considerable gravel would be mixed with it by ploughing. Hoping these suggestions may lead to further experiments, I am, with great respect, your obedient servant.

WILLARD PEELE.

[The following communication from General H. A. S. Dearborn, of Roxbury, on a subject of great importance to the agriculture of this State, we insert with great pleasure. It cannot be doubted that the Locust tree (Robinia Pseud-Acacia) will flourish as well in the climate and soil of Massachusetts, as in any more southern part of the United States. Many of us recollect, that these trees forty years since, formed some of the finest ornaments of our public roads, and

often attained a size which would render them useful in naval and civil architecture. Their failure since that period, has been in a principal degree, owing to the destructive insect which General Dearborn has described, and of which, he sent to the Trustees of the Massachusetts Agricultural Society, specimens in the Larva, Chrysalis, and perfect state. Whether the modes which he has recommended of destroying them are the best, of which he modestly expresses his doubts, still, no man can doubt, that he is entitled to public gratitude for the attention which he has paid to the subject.

We earnestly request the co-operation of other intelligent gentlemen in the investigation of this question.

As the tree will flourish in our soil and climate, and can endure our winters—as it has been seen of a height of fifty feet, and a diameter of two feet, we think the question of its adaptitude to our climate at rest. We request the attention of scientific gentlemen to the following questions, and solicit communications of their opinion upon them.

1st. Are there any causes, which favour the production of the insect so fatal to these trees in our climate, which do not operate in more southern regions?

2dly. Are there any more efficacious methods than these recommended by General Dearborn, for their extirpation? and if any, what are they?

3dly. Would it be expedient to introduce the seeds of the Locust tree from the south, and to offer premiums to those who should exhibit the finest nurseries of them, free from the insect which has proved so fatal to them?

The Trustees would be happy to receive any communications on this subject. It would seem to them impolitic to abandon the cultivation of a valuable forest tree, because for a few years its culture had been unsuccessful. To meet, and overcome the impediments, which nature occasionally interposes to the cultivation of particular plants, seems to be the province of intelligent agriculture. It is a law, which we cannot disobey or despise, and seems to be one of the conditions of our enjoyment of the blessings of providence.]

Brinley-place, Roxbury, January 5th, 1821.

[J. Lowell, Esq. Corresponding Secretary of the Massachusetts Agricultural Society.]

SIR,

HAVING a number of Locust trees on my grounds, which have been, annually, much injured by a worm, that perforates the trunk and larger branches, in so many directions and so deep, as to cause them to be easily broken down by the wind, I have endeavoured to discover some method, of, either destroying those little enemies, or, of protecting one of our most valuable timber and magnificent ornamental trees from their ravages.

In the first number of the fifth volume of the "Massachusetts Agricultural Journal," is an interesting communication on this subject; but the insect, which has attacked my trees, is not the same as there described, as you will perceive, from an examination of those herewith transmitted, and the facts I have the honour of submitting.

Before it was possible to know how to attack this devastating insect with any hope of success, it was necessary to become acquainted with its character and habits, which, after several years of careful investigation, and minute attention, I have, happily, accomplished.

In the small box, I send a number of the perfect insects, both male and female;—phial No. 1, contains the larva, and No. 2, the chrysalis.

From the first to the twenty-fifth of September, the flies are to be seen on the trunks of the trees;—the female very active in seeking out little interstices between the rough exterior bark, in which to deposit her eggs;—during nearly the whole of the time the male continues on her back, and is thus borne about, and after each deposition, they copulate. From four to nine eggs are deposited in each place, and often, not more than four minutes intervene between the depositions.

I had cut out pieces of the bark, containing receptacles of eggs, to accompany the insects, in their various stages; but, unfortunately, they have been lost. The eggs are snow-white, and about the size of yellow mustard-seed. Before the cold weather commences, the young larva appear, and resemble a maggot; they just bury themselves in the tender inner bark, where they remain, until the first of April, sometimes later, according to the season, when they commence boring, and soon pass into the solid wood. It can always be ascertained, when, and where they have began their destructive labours, as the sap oozes out from the wounds they have inflicted.

By the twentieth of July the larvæ have attained their full size, and cease to bore; those sent, were taken from a large limb of a tree, sawed off and split open, for the purpose of ascertaining their state and position. This I had done, at different periods, in June, July, and August, to examine them in their various changes. On the twenty-eighth of July, those in phial No. 2, were taken out, and the perfect insects were caught on the trees the third of September.

From several years observation, having obtained the preceding facts, I determined, last spring, to endeavour to rescue my trees from farther injury. The moment it was discovered the young larvæ had commencing boring, I white-washed all the trees, as high, among the branches, as any of them were discoverable at work; the next morning, I was pleased to find a vast number dead, on the outside of their holes; the white-washing was repeated for four or five consecutive mornings, when, the trees being completely coated with lime, I ceased, and was in hopes, that those, which the liquid alkali had not killed, would be destroyed by the exclusion of the air, which is the case with all kinds of borers;—but in the course of a few weeks, it was perceived, there were many busily at work; the saw-dust which they made, was pushed out from the holes, and indicated that not a few were still alive. The holes were then stopped up with pure

lime-mortar, and the trunks and branches of the trees immediately covered with a thick coat of white-wash; but, the succeeding day, it was found many of the holes were opened, and the saw dust continually falling from them, left no doubt of the unabating industry of the worms. Presuming that the lime-mortar was pressed out before it was dry, I had some made, to which, calcined plaster of Paris was added, to facilitate the desiccation, and render it so hard and compact as to resist the efforts of the worms to obtain air,—and again white-washed the trees;—this did not produce the desired effect, and I concluded to give up that mode of attack, with the intention of awaiting a more favourable period to renew hostilities.

When it was ascertained they had ceased to bore, and were passing to the chrysalis state, and of course inactive, I had the holes filled up with mortar, and the trees thoroughly white-washed to *prevent the escape* of the perfect insect, when ready to fly, as the cement would, before that time, become quite hard; but in a number of places, the decayed bark, or white-wash peeled off, and drew out with it the mortar from the holes, so that, at the proper season the flies appeared, but less in number, than in any preceding year; and they found it extremely difficult to procure suitable places in which to deposit their eggs, as I, particularly, observed, they avoided every spot which was covered with lime, and eagerly sought such sites, as rendered it certain, that when the young larvæ appeared, they should be in direct contact with the inner bark, from whence they might obtain sustenance; and the peculiar formation and growth of the bark of the Locust renders this easy, it being crooked into such fissures, from the rapid increase of the wood, which necessarily rends the external bark asunder.

Thus, I have, perhaps, failed in the complete accomplishment of my object, but am still induced to believe, that by a little attention to the trees the next spring, to succeed; if I do not, it will enable others, after becoming acquainted with the character of the enemy, and his mode of operations, to

prosecute a war against him, that shall be more successful and fortunate in its results.

I intend, should this experiment fail, to head down all my locusts in the latter part of April, and burn up the wood, which will effectually destroy all the remaining larvæ on my land; and as the trees are of rapid growth, and the stools throw up luxuriant suckers, I shall soon have young thrifty trees, which can be more certainly preserved from the attacks of the insects, should they again visit them; for trees, which are so large as to have very rough bark, supply so many fastnesses for the deposition of the eggs, and to cover the labour of the worms, that it is very difficult to extirpate them.

If this course was pursued generally, and at the same season of the year, by such persons as have locust trees on their estates, I believe the insects would be exterminated, as I do not find that they visit any other tree, and in a few years we should have healthy and vigorous groves of this pride of the forest.

It is not many years since the history of the canker-worm was promulgated, and we are indebted to Professor Peck, for that valuable information, which has led to the discovery of various means to prevent their ruinous assaults on the orchard; may it not then be sanguinely anticipated, that the combined efforts of those, who are solicitous to advance the best interests of the nation, will ultimately enable the owners of woodlands and cultivated groves to bid defiance to the noiseless dilapidations of this destructive insect.

With grateful acknowledgments for your exertions, to foster and advance the science of agriculture, I am, sir,

Your obedient servant,

H. A. S. DEARBORN.

ON THE FORM OF ANIMALS. BY HENRY CLINE, Esq. Surgeon.

[From the Publications of the Board of Agriculture, England, Vol. IV.]

THE form of domestic animals has been greatly improved by selecting with much care, the best formed for breeding; but the theory of improvement has not been so well understood, that rules could be laid down for directing the practice. There is one point particularly, respecting which the opinions of breeders have much varied, which is, whether crossing the breed be essential to improvement.

It is the intention of this communication to ascertain in what instances crossing is proper, and in what prejudicial; and the principles upon which the propriety of it depends.

It has been generally supposed that the breed of animals is improved by the largest males. This opinion has done considerable mischief, and would have done more injury if it had not been counteracted by the desire of selecting animals of the best form and proportions, which are rarely to be met with, in those of the largest size.

Experience has proved that crossing has only succeeded in an eminent degree, in those instances in which the females were larger than in the usual proportion of females to males; and that it has generally failed when the males were disproportionally large.

The external form of domestic animals has been much studied, and the proportions are well ascertained. But the external form is an indication only of internal structure. The principles of improving it must therefore be founded on the knowledge of the structure and use of internal parts.

The lungs are of the first importance. It is on their size and soundness that the health of an animal principally depends. The power of converting food into nourishment, is in proportion to their size. An animal with large lungs, is capable of converting a given quantity of food into more

nourishment than one with smaller lungs, and therefore has a greater aptitude to fatten.

The Chest.

The external indication of the size of the lungs is the form and size of the chest; the form of which should have the figure of a cone, having its apex situated between the shoulders, and its base towards the loins.

The capacity of the chest depends upon its form more than on the extent of its circumference; for, where the girth is equal in two animals, one may have much larger lungs than the other. A deep chest therefore is not capacious unless it is proportionally broad.

The Pelvis.

The pelvis is the cavity formed by the junction of the haunch bones with the bones of the rump. It is essential that this cavity should be large in the female, that she may be enabled to bring forth her young with less difficulty. When this cavity is small, the life of the mother and of her offspring is endangered.

The size of the pelvis is chiefly indicated by the width of the hips and the breadth of the *twist*, which is the space between the thighs.

The breadth of the loins is always in proportion to that of the chest and pelvis.

The Head.

The head should be small, by which the birth is facilitated. Its smallness affords other advantages, and generally indicates that the animal is of a good breed.

Horns are useless to domestic animals. It is not difficult to breed animals without them. The breeders of horned cattle and horned sheep, sustain a loss more extensive than they may conceive; for it is not the horns alone, but also much more bone in the skulls of such animals to support their horns; besides there is an additional quantity of ligament and muscle in the neck which is of small value.

The skull of a ram with its horns, weighed five times more than another skull which was hornless. Both these skulls were taken from sheep of the same age, each being four years old. The great difference in weight depended chiefly on the horns; for the lower jaws were nearly equal, one weighing seven ounces, and the other six ounces and three quarters; which proves that the natural size of the head was nearly the same in both, independent of the horns and the thickness of the bone which supports them.

In a horned animal the skull is extremely thick. In a hornless animal it is much thinner; especially in that part where the horns usually grow.

To those who have not reflected on the subject, it may appear of little consequence whether sheep and cattle have horns; but on a very moderate calculation it will be found, that the loss in farming stock, and also in the diminution of animal food, is very considerable, from the production of horns and their appendages. A mode of breeding which would prevent the production of these, would afford a considerable profit in an increase of meat and wool, and other valuable parts.

The length of the neck should be proportioned to the height of the animal, that it may collect its food with ease.

The Muscles.

The muscles and tendons, which are their appendages, should be large; by which an animal is enabled to travel with greater facility.

The Bones.

The strength of an animal does not depend upon the size of the bones, but on that of the muscles. Many animals with large bones are weak, their muscles being small. Animals that were imperfectly nourished during growth, have their bones disproportionately large. If such deficiency of nourishment originated from a constitutional defect, which is the most frequent cause, they remain weak during life. Large bones, therefore, generally indicate an imperfection in the organs of nutrition.

On the improvement of Form.

To obtain the most approved form, two modes of breeding have been practised; one, by the selection of individuals of the same family; called *breeding in-and-in.* The other by selecting males and females from different varieties of the same species; which is called *crossing the breed.*

When a particular variety approaches perfection in form, breeding in-and-in may be the better practice; especially for those not well acquainted with the principles on which improvement depends.

When the male is much larger than the female, the offspring is generally of an imperfect form. If the female be proportionally larger, the offspring is of an improved form. For instance, if a well formed large ram be put to ewes proportionally smaller, the lambs will not be so well shaped as their parents: but if a small ram be put to larger ewes, the lambs will be of an improved form.

The proper method of improving the form of animals, consists in selecting a well formed female, proportionally larger than the male. The improvement depends on this principle, that the power of the female to supply her offspring with nourishment is in proportion to her size, and to the power of nourishing herself from the excellence of her constitution.

The size of the fœtus is generally in proportion to that of the male parent; and therefore, when the female parent is disproportionately small, the quantity of nourishment is deficient, and her offspring has all the disproportions of a starveling. But, when the female, from her size and good constitution, is more than adequate to the nourishment of a fœtus of a smaller male than herself, the growth must be proportionately greater. The larger female has also a greater quantity of milk, and her offspring is more abundantly supplied with nourishment after birth.

To produce the most perfect formed animal, abundant nourishment is necessary from the earliest period of its existence, until its growth is complete.

It has been observed, in the beginning of this paper, that the power to prepare the greatest quantity of nourishment, from a given quantity of food, depends principally upon the magnitude of the lungs, to which the organs of digestion are subservient.

To obtain animals with large lungs, crossing is the most expeditious method ; because well formed females may be selected from a variety of a large size, to be put to a well formed male of a variety that is rather smaller.

By such a method of crossing, the lungs and heart become proportionately larger, in consequence of a peculiarity in the circulation of the fœtus, which causes a larger proportion of the blood, under such circumstances, to be distributed to the lungs than to the other parts of the body ; and as the shape and size of the chest, depend upon that of the lungs, hence arises the remarkably large chest, which is produced by crossing with females that are larger than the males.

The practice according to this principle of improvement, however, ought to be limited; for, it may be carried to such an extent, that the bulk of the body might be so disportioned to the size of the limbs as to prevent the animal from moving with sufficient facility.

In animals, where activity is required, this practice should not be extended so far as in those which are required for the food of man.

On the Character of Animals.

By character in animals is here meant, those external appearances by which the varieties of the same species are distinguished.

The characters of both parents are observed in their offspring ; but that of the male more frequently predominates. This may be illustrated in the breeding of horned animals ; among which there are many varieties of sheep, and some of cattle, that are hornless.

If a hornless ram be put to a horned ewe, almost all the lambs will be hornless; partaking of the character of the male rather than of the female parent.

In some counties, as Norfolk, Wiltshire, and Dorsetshire, most of the sheep have horns. In Norfolk the horns may be got rid off by crossing with the Ryeland rams; which would also improve the form of the chest and the quality of the wool. In Wiltshire and Dorsetshire, the same improvements might be made by crossing the sheep with South Down rams.

An offspring without horns might be obtained from the Devonshire cattle, by crossing with hornless bulls of the Galloway breed; which would also improve the form of the chest, in which, the Devonshire cattle are often deficient.

Examples of the good effects of Crossing the Breed.

The great improvement of the breed of horses in England arose from crossing with those diminutive Stallions, Barbs, and Arabians; and the introduction of Flanders Mares into this country was the source of improvement in the breed of cart horses.

The form of the swine has also been greatly improved, by crossing with the small Chinese boar.

Examples of the bad effects of Crossing the Breed.

When it became the fashion in London to drive large bay horses, the farmers in Yorkshire put their mares to much larger stallions than usual, and thus did infinite mischief to their breed, by producing a race of small chested, long legged, large boned, worthless animals.

A similar project was adopted in Normandy, to enlarge the breed of horses there by the use of stallions from Holstein; and, in consequence, the best breed of horses in France would have been spoiled, had not the farmers discovered their mistake in time, by observing the offspring much inferior in form, to that of the native stallions.

Some graziers in the Island of Sheppey, conceived that they could improve their sheep by large Lincolnshire rams, the produce of which, however, was much inferior in the shape of the carcase, and the quality of the wool ; and their flocks were greatly injured by this attempt to improve them.

Attempts to improve the native animals of a country, by any plan of crossing, should be made with the greatest caution ; for, by a mistaken practice extensively pursued, irreparable injury may be done.

In any country where a particular race of animals has continued for centuries, it may be presumed that their constitution is adapted to the food and climate.

The pliancy of the animal economy is such, as that an animal will gradually accommodate itself to great vicissitudes in climate and alterations in food ; and by degrees undergo great changes in constitution ; but these changes can be affected only by degrees, and may often require a great number of successive generations for their accomplishment.

It may be proper to improve the form of a native race, but at the same time it may be very injudicious to attempt to enlarge their size.

The size of animals is commonly adapted to the soil which they inhabit ; where produce is nutritive and abundant, the animals are large, having grown proportionally to the quantity of food which for generations, they have been accustomed to obtain. Where the produce is scanty, the animals are small, being proportioned to the quantity of food which they were able to procure. Of these contrasts the sheep of Lincolnshire and of Wales are examples. The sheep of Lincolnshire would starve on the mountains of Wales.

Crossing the breed of animals may be attended with bad effects in various ways ; and that, even when adopted in the beginning on a good principle ; for instance, suppose some larger ewes than those of the native breed were taken to the mountains of Wales and put to the rams of that country ; if these foreign ewes were fed in proportion to their size, their

lambs would be of an improved form, and larger in size than the native animals; but the males, produced by this cross, though of a good form, would be disproportionate in size to the native ewes; and therefore, if permitted to mix with them, would be productive of a standing ill-formed progeny. Thus a cross which, at first, was an improvement, would, by giving occasion to a contrary cross, ultimately prejudice the breed.

The general mistake in crossing has arisen from an attempt to increase the size of a native race of animals; being a fruitless effort to counteract the laws of nature.

The Arabian horses, are, in general, the most perfect in the world; which probably has arisen from great care in selection, and also from being unmixed with any variety of the same species, the males therefore have never been disproportioned in size to the females.

The native horses of India are small, but well proportioned, and good of their kind. With the intention of increasing their size, the India Company have adopted a plan of sending large stallions to India. If these stallions should be extensively used, a disproportioned race must be the result, and a valuable breed of horses be irretrievably spoiled.

From theory, from practice, and from extensive observation, which is more to be depended upon than either, it is reasonable to form this conclusion, that it is wrong to enlarge a native breed of animals; for, in proportion to their increase of size, they become worse in form, less hardy, and more liable to disease.

Petersham, October 2, 1820.

[To the Corresponding Secretary.]

SIR,

SHOULD the following communication, respecting the preservation of fruit trees from decay and premature old age, appear to be entitled to notice, you will oblige by presenting it to the Trustees of the Society.

Several years ago I owned a tan yard on the bank of a pond, raised by a dam across a small rivulet, which passes through my farm in Petersham. Some of the tan, after it was taken from the vats, was occasionally thrown into the pond. I noticed from time to time, that the fish, in the pond, died. I was induced to believe, that some deleterious property in the tan produced the effect on the fish, and that it might be converted to some valuable use in agriculture.

At that time, from various causes, many of my fruit trees, and particularly my pear, peach, and plum trees, were in a state of decay. For the purpose of an experiment, I applied a small quantity of tan to the roots of my decayed trees; the result exceeded my most sanguine expectations. The trees began to revive, and the next season I made a similar and more extensive use of my tan about my fruit trees; and the result has been obvious in all, but more particularly in my pear, peach, and plum trees, which are the most liable to decay in this section of the county.

Tan about the roots of trees, loosens the earth, and prepares it to receive and communicate greater quantities of nutriment to the trunk and branches. The tree is thereby invigorated, and acquires more strength to resist any disease, by which it may be attacked. But the most beneficial effect of the use of tan is to prevent the approach of all kinds of insects, which prey upon the very life of the tree. My fruit trees, which have been prepared with tan, have been wholly free from the ravages of caterpillars, canker-worms, grubs, and every kind of insects; while others, which stand near by, and which have been neglected, have been more or less injured by these common nuisances, *too common* in fruit orchards, through the careless neglect of the husbandman. Tan also prevents the black gum from oozing from the trunks and branches of fruit trees; which is more frequently the case in damson, plum, and peach trees, than in any other, arising from the constitutional weakness of the tree, or from some other cause, which is prevented by the application of tan.

This was the state of my trees, and of those of my neighbours, before I made the experiment by using tan. The result is obvious and notorious to all, who examined the trees at the different periods. My trees are healthy and flourishing and vigorous, while those of my neighbours, who have neglected the use of tan, are either dead or in the last stages of decay. My fruit has not only been greatly increased in size and quantity, but its flavour has been much improved and enriched.

A remarkable instance of the wonderful effect of tan in restoring decayed fruit trees to health and vigour is observable in a pear tree, which stands in my garden. Six or seven years ago it was almost lifeless. It had but one or two small green branches on it; the rest were entirely dead and dry. I was induced to try the effect of tan upon it, but with little hope of success. In the course of two or three years I was astonished to see new branches shoot out from its trunk; and it is now the most flourishing fruit tree on my farm. This fact can be attested by hundreds.

It has generally been my practice to renew the tan about the roots of my trees once in two years. It may possibly be expedient to renew it annually, as soon as the snow has been dissolved from the roots. I have usually appropriated from half a bushel to two bushels to each tree, according to its size. It may be carelessly placed around the trunk of the tree; and it will soon spread itself to a proper distance over the roots.

I feel the most perfect conviction of the sure and certain effect of tan in restoring decayed fruit trees to health and preserving them to vigour. Should any one, however, entertain doubts, the experiment may be easily made, with trifling expence, particularly by those who live in the neighbourhood of tan yards. Tan has been esteemed useless, after it has been thrown aside by the tanner. Any one, who will ask, may receive without fee or reward.

JOHN GATES.

Petersham, October 2, 1820.

We have seen and examined the fruit trees of Mr. Gates, a respectable farmer of this town. We are satisfied that his statement respecting the effect of tan, in restoring decayed fruit trees to health, and preserving them in a flourishing state, is correct. Mr. Gates has paid great attention, in improving his fruit trees, and we have no hesitation in saying, that we have no doubt that his discovery of the good effect of tan, will be most valuable to the community.

HUTCHINS HAPGOOD.
JARED WEED.

RUTA BAGA, OR SWEDISH TURNIP.

[We are induced to insert the following communication from the Hon. Mr. Pickering, which first appeared in the "American Farmer," not only because we have the highest respect for his opinions on agricultural subjects, but because Mr. Cobbett's work had an extensive circulation in this part of our country, and was calculated to produce an impression unfavourable to the culture of the potatoe.—The unexampled boldness of assertion, not supported by facts, which characterizes Mr. Cobbett's writings on all subjects, appears to us to demand a thorough examination of them. His violent prepossession in favour of the Ruta Baga, or Swedish Turnip, led him to undervalue the potatoe. It is not our design in inserting Col. Pickering's remarks to discourage the culture of the Swedish turnip, nor do we understand such to have been the scope of Col. Pickering's observations. The only purpose is to preserve to the potatoe cultivation, the degree of favour to which it is justly entitled. We have struck out the introductory remarks of Col. Pickering which were applicable only to the paper in which it was introduced.]

The encomiums passed on the Ruta Baga by that extraordinary man William Cobbett, and his reprobation of potatoes, are perhaps equally extravagant. If there be truth in the

analysis of these two roots by Sir Humphrey Davy, the same weight of potatoes contains more than three times the quantity of nutritious matter that is found in the Ruta Baga. Yet if both be given in their *raw* state, to domestic animals, the latter may be found the better root. For human food, raw potatoes would be intolerable, while Ruta Baga is not unpalatable. Yet if both be equally well cooked, few can hesitate to give a decided preference to the potatoe, as well in regard to taste as nutrition. The potatoe, if a good and mealy kind, will well supply the place of bread. Its value in this respect, is satisfactorily ascertained in the British Isles, more especially in Ireland, where the practical judgment of that class of its population which makes the greatest use of potatoes, very well accords with Mr. Davy's analysis of grains and roots. He states that of a 1000 parts of wheat, 955 are nutritive; and of potatoes, 200 to 260 parts. Now in a report to the English Board of Agriculture, in the year 1795, by an intelligent Irish gentleman, Samuel Hayes, Esq. it is stated "That the nourishment from one pound of good household wheat bread, is equal to five pounds of the *best sort* of potatoes." That this was first suggested to the "ingenious gentleman" Mr. Broughall, who gave the information to Mr. Hayes, "from a memoir on the subject by Mr. Parmentier, a French chemist; and has since been supported by many corroborating circumstances. Mr. Broughall having observed, that whatever weight the shilling *household loaf* consists of in Dublin, five times that weight of *potatoes* may have been bought at that time for the same sum; and if by any cause the price of potatoes should rise above that proportion with respect to bread, the lower class then decline the purchase of potatoes; experience having taught them the cheapest mode of support." Mr. Hayes adds, "That as in the country parts of Ireland, the fowls, pigs and dogs come in for their share, (of potatoes) there is certainly more consumed than *five times* the quantity of *bread*, which might be necessary; but it is far from *thrown away*; the family by this

means eat none but the soundest and most palatable potatoes, whilst the refuse supply equally the wants of the other animals. We must also add, that another cause of increased consumption arises from the universal practice of allowing the little children of the house to roast potatoes for their own use, as often as they please, in the turf or wood ashes. As you ride by a cottage, you frequently see a group of children run to the door, each one holding in his hand a roasted potatoe ; and to this facility of procuring plenty of *wholesome sustenance*, at this stage of life, may be attributed *the robust health of our peasantry, and the great population of our country*. But according to Mr. Cobbett, the potatoe, when analysed, contains chiefly *dirt*, *water* and *straw* ; and seeing that Ruta Baga, according to Sir H. Davy's analysis, contains only 64 nutritive parts (while the potatoe contains 200 to 260) in a 1000, of what do the remaining 936 parts consist? Doubtless *as truly* as the potatoe, of *dirt*, *water* and *straw*.

The common opinion of the injurious if not poisonous quality of the *juice* of the potatoe, is probably correct ; and will account for the often stated fact that raw potatoes will barely keep swine alive ; while the experience of many farmers will incontestably prove, that when boiled (the water in which they are boiled being thrown away) potatoes will greatly contribute to the growth and fattening of hogs. Even in their raw state, they are unquestionably useful in the fattening of cattle, and for increasing the milk of cows, while fed on hay or other dry fodder in winter. Probably, *raw* potatoes while full of juice, if useless or injurious to *swine* may be a *salutary food* for *cattle* ; certain it is, that the latter eat them voraciously, which is not the case with swine. Yet even swine will not only live but thrive upon them, when having been spread and dried until shrivelled, they are kept till after mid-summer of the year succeeding their growth. The juice of the root of one species of the Cassada, is poisonous ; but this being expressed, wholesome bread, much used in the West Indies, is then made of the roots.

Some sorts of potatoes must yield more nourishment than others; and hence the difference in the results of Sir H. Davy's experiments in analysing them. The mealy and well flavoured potatoe might have that superiority over the watery and ill-flavoured. The same remarks will apply to other roots. Much also, as to their quantity of nutritive matter, may depend on the nature of the soil where roots of the same kind are raised. I once pulled a flat turnip of the common kind, weighing two pounds, from the deep rich soil at the foot of a hill, and another weighing only one pound from a dry gravelly loam; both were boiled and mashed; and when the watery juice of each was pressed out, the eye could not determine of which there was the greatest quantity; both were well flavoured.

The potatoes of Nova Scotia and the remoter parts of the District of Maine, (like those from England and Ireland,) are vastly superiour to those generally raised in Massachusetts and the States still further south. It is the common opinion that potatoes require a dry (and consequently a warm) soil. This, as to the United States in general, is doubtless an error. Ireland and the west of England are moist and cool countries; and from them have usually come the best potatoes. In all but the most northern portions of the United States, it would seem advisable to choose moist and cool grounds, with northern aspects, for raising potatoes, at least for the table. Dr. Anderson, if I mistake not, somewhere mentions a very dry summer in Great Britain, when the potatoe crops were small in quantity, and the roots of very ordinary quality. The next summer was amply moist, and then the potatoes were abundant in quantity and of excellent quality.

My own observation and experience have satisfied me, that, generally speaking, potatoes improve in their quality when carried from a warmer to a colder climate; and just the reverse happens when carried from one colder to a warmer. In the latter case, the produce of even the first year has generally borne hardly a resemblance to those

planted ; *these* were mealy and finely flavoured ; their produce moist and of different flavour. The best early potatoes I ever had, were produced from a handful of small ones brought from Maryland. It was in the third year that they attained their greatest excellence. They were afterwards confounded with others and lost, for want of my personal attention.

We have in Massachusetts a very productive potatoe, said to have been brought from the river Plate. It is a long red potatoe, which I have cultivated for a dozen years. I think it has been constantly improving in quality ; and has now become a good potatoe for the table, especially in the spring.

Of the same sorts of potatoes, individual roots are greatly superiour to others. Perhaps the proportion of the latter may be increased, (if thereby an entire crop cannot be obtained,) in the following way ; select the fairest roots of a large size, and plant them entire in hills, one potatoe in a hill. When the produce is ripe, boil two or three from each hill, carefully marking from what hills they were respectively taken, and save for seed the residue in the hills giving the best samples. This process, a few times repeated, may furnish potatoes of a uniformly good quality.

But to return to the Ruta Baga. Your correspondent " A Friend," refers the other " A Subscriber," to Mr. Barney's application of this root, in feeding his two fat oxen, as stated in the first number of the American Farmer. But what is found there ? That those extraordinary beeves were *fattened* on that root ? Just the reverse. It was Indian corn meal which improved and finished them so highly, and the Ruta Baga was used rather as a *condiment*, to give the oxen a better appetite for the meal. They were two years in fattening. The first winter they eat *equal quantities* of Indian meal and of the Ruta Baga ; but as the latter contains (according to Sir H. D.) only 64 nutritive parts in a 1000, while

Indian corn probably contains at least 900,* the meal contributed fourteen times as much nourishment as the Ruta Baga. In the second winter the difference was still greater; the ox Columbus then eating daily from 12 to 16 quarts of meal, and only 3 to 12 quarts of Ruta Baga. And you mention that Mr. Barney "gives the preference to Indian meal over every other species of food for fattening either sheep or cattle, and gives it in its dry unsifted state." It has ever been the practice of farmers in New England, in stall-feeding cattle on hay and Indian meal, to give the latter in the same form. From American farmers, probably, Mr. Barney, an Englishman, learned that manner of using Indian meal.

You say also, that "Mr. Barney concurs with Mr. Cobbett in the belief, that the Ruta Baga is sweeter and far more nutritious than any other root, or vegetable for feeding live-stock." But this is mere matter of *opinion*. Even to the taste, the parsnip, carrot, and every sort of beet, is manifestly sweeter; and to decide practically the value of Ruta Baga, compared with other roots, in fattening cattle, more accurate experiments will be necessary than have been made by either. In the mean time, we may more confidently rely on the analysis of vegetables by so distinguished a chemist as Sir Humphrey Davy. He states, that the red beet contains 121 parts in a 1000, of saccharine matter or sugar—the white beet 119 such parts—parsnips 90, and carrots 95;

* "In the last century, a professor of Chemistry in Italy, discovered that the meal of maize, (Indian corn) like the meal of wheat, contained not only starch, but a soluble mucilage or extract, and a glue of the same nature as animal matter."

This is stated by Dr. Pearson, in his analysis of the potatoe root, communicated to the Board of Agriculture; which, as well as Mr. Hayes' communication above mentioned, appear in a Report on the Culture and Use of Potatoes, published by the board in 1795. I wish some of our chemists would analyse the best sorts of Indian corn; I am inclined to think this grain contains nearly or quite as much nutritive matter as wheat.

while the Ruta Baga contains no more than 51 such parts. The mangel wurtzel, or greater beet, is in taste like the red and white beets, and doubtless contains as much saccharine matter; all of them more than double the quantity of nutriment that is afforded by the Ruta Baga; and parsnips and carrots fifty per cent. more. On strong lands in England the mangel wurtzel yields currently 48 tons per acre. See Memoirs of the Philadelphia Society of Agriculture, Vol. III. Appendix p. 97, where the mode of culture is given, for the regular production of such immense crops. Of carrots, eighteen tons (upwards of 700 bushels, 56 lbs. to the bushel) have been raised on an acre in Massachusetts; and these, as well as the mangel wurtzel, cattle eat with great avidity. For cows giving milk, both are to be preferred to the Ruta Baga, even if they gave no more nutriment. In the last autumn, the flavour of the butter was very much injured by my cows feeding plentifully on the neches and leaves (greens, as Mr. Cobbett calls them,) of the Ruta Baga.*

Conclusion.

Ruta Baga sown in June will yield great crops; the seeds vegetate quickly, and the plants soon attain a size to admit of easy culture. The root is hardy, will endure severe cold, and keep till mid-summer of the year following their growth; and are usefully applied for food to all domestic animals, cows giving milk probably to be excepted.

Mangel Wurtzel, cultivated in the same manner, and sown in April or early in May, will yield crops as large as the Ruta Baga; individual roots growing to the weight of from 5 to 10 pounds. But the roots will not bear frost like the Ruta

* A late English writer (Bonnington Mowbray, Esq.) treating of the food for milch cows, says "Cabbages may be given *moderately*, but turnips (he probably means the common turnips) make thin milk and bad butter, in spite of all the nostrums which have been recommended as preventives." I fear the Ruta Baga will not be wholly free from the same objection.

Baga. It will be more easy to preserve them in winter, in the middle than in the northern states. The genuine mangel wurtzel is of a red colour: and when full grown, has more than half its body above ground.

Carrots being of smaller growth than either of the former roots, seem to require a different arrangement. Instead of one row on a ridge, I would sow two rows, ten or twelve inches apart; and thin the plants to four or five inches distance in the row, with intervals of three feet between the double rows, for tilling them with the plough. In this manner, I entertain no doubt that twenty tons and upwards to the acre may be raised.

Both carrots and mangel wurtzel, being of much softer texture than Ruta Baga, are more easily chopped into pieces for cattle. It is generally understood that cows giving milk in winter, if fed plentifully with carrots, will produce yellow butter. Mr. Jefferson's authority may be adduced for stating, that the famous Parmesan cheese of Italy, receives its light yellow colour from the juice of carrots, mixed with the milk or curd. The flavour of American cheese has sometimes appeared to be injured by an excessive use of annatto; the same colouring that has long been used in England. The practice doubtless originated in deception, to give that colour *artificially* which *rich milk* afforded of *itself*, a fine yellow. The practice in both countries is now continued from fashion. The Parmesan, according to Mr. Jefferson, is a two meal cheese, made of the night's milk skimmed, (the cream being taken off very early the next morning for making butter) and mingled with the new milk of the morning. It is not a fat cheese, and this accounts for it.

I am, Sir, your obedient servant,

T. PICKERING.

January 4, 1820.

CATTLE SHOW, EXHIBITION OF MANUFACTURES, AND PLOUGHING MATCH, AND PUBLIC SALE OF ANIMALS, AND MANUFACTURES, AT BRIGHTON, ON WEDNESDAY AND THURSDAY, THE TENTH AND ELEVENTH OF OCTOBER, 1821. TO COMMENCE AT NINE O'CLOCK, ON EACH DAY.

THE Trustees of the Massachusetts Society, for the Promotion of Agriculture, encouraged by the patronage of the Legislature of this State, intend to offer in Premiums, not only the sum granted by the Government for that purpose, but also the whole amount of the income of their own funds. They, therefore, announce to the public, their wish to have a Cattle Show, and Exhibition of Manufactures, &c. &c. at Brighton, on Wednesday and Thursday, the 10th and 11th, of October, 1821; and they offer the following Premiums:—

FOR STOCK.

For the best Bull, raised in Massachusetts, above one year old,	$40
For the next best do. do.	25
For the best Bull Calf, from five to twelve months old,	15
For the next best do. do.	8
For the best Cow, not less than three years old,	40
For the next best do. do.	30
For the next best do. do.	20
For the best Heifer, from one to three years old, with or without calf,	15
For the next best do. do.	10
For the best Ox, fitted for slaughter, regard to be had to the mode and expense of fatting,	50
For the next best do. do.	40
For the next best do. do.	30
For the best pair of Working Cattle,	30
For the next best do. do.	25
For the next best do. do.	20
For the next best do. do.	15
For the next best do. do.	10

For the best pair of Spayed Heifers, not less than one year old, - - - - - - - - $25

For the best Spayed Sows, not less than four in number, and not less than five months old, - 20

The claimant to be entitled to either of these two last premiums, must state the mode of operation and treatment, in a manner satisfactory to the Trustees.

For the best Merino Wethers, not less than six in number, having respect to form and fleece, - - 20

For the next best do. do. do. do. - - - - 10

For the best native Wethers, not less than six in number, do. - - - - - - - 10

For the next best do. do. do. - - - 5

For the best Merino Ram, do. - - - - 15

For the next best do. - - - - - 10

For the best Merino Ewes, not less than five in number, do. - - - - - - 20

For the next best do. do. do. - - - - 10

For the best Boar, not exceeding two years old, do. 10

For the next best do. do. do. - - - 5

For the best Sow, - - - - - - 10

For the next best do. - - - - 5

For the best Pigs, not less than two in number, nor less than four months old, nor more than eight, - 10

For the next best do. do. - - - - 5

None of the above animals will be entitled to premiums, unless they are wholly bred in the State of Massachusetts.

No animal, for which to any owner one Premium shall have been awarded, shall be considered a subject for any future Premium of the Society, except it be for qualities different from those for which the former Premium was awarded.

Any of the above Stock, when raised and still owned at the time of exhibition, by the person who raised them, will entitle the claimant to an allowance of ten per

cent. in addition. But Sheep, to be entitled to any of the above Premiums, must be raised by the person entering them.

FOR AGRICULTURAL EXPERIMENTS.

To the person who shall raise the greatest quantity of winter Wheat on an acre, - - - - - $30

To the person who shall raise the greatest quantity of Indian Corn on an acre, not less than seventy bushels, - - - - - - - - 30

To the person who shall make the most satisfactory experiment, to ascertain the best mode of raising Indian Corn, in hills, in rows, or in ridges; not less than half an acre being employed in each mode, in the same field, the quantity and quality both of land and manure to be equal and uniform in each mode; all to receive a cultivation requisite to produce a good crop, - - - - - - - 30

To the person who shall raise the greatest quantity of Carrots on an acre, not less than six hundred bushels, - - - - - - - 20

To the person who shall raise the greatest quantity of Potatoes on an acre, not less than five hundred bushels, - - - - - - - - 20

To the person who shall raise the greatest quantity of Parsnips on an acre, not less than four hundred bushels, - - - - - - - - 20

To the person who shall raise the greatest quantity of common Beets on an acre, not less than six hundred bushels, - - - - - - - 20

To the person who shall raise the greatest quantity of Mangel Wurtzel on an acre, not less than six hundred bushels, - - - - - - - 20

To the person who shall raise the greatest quantity of Ruta Baga on an acre, not less than six hundred bushels, - - - - - 20

To the person who shall raise the greatest quantity of common Turnips on an acre, not less than six hundred bushels, - - - - - $20

To the person who shall raise the greatest quantity of Onions on an acre, not less than six hundred bushels, - - - - - 20

To the person who shall raise the greatest quantity of Cabbages on an acre, not less than twenty-five tons weight, - - - - - 20

To the person who shall introduce any Grass, not before cultivated in this state, and prove, by actual experiment, and produce satisfactory evidence of its superiority to any now cultivated, - - 30

To the person who shall give satisfactory evidence on "Soiling Cattle," not less than six in number, and through the whole season, together with a particular account of the food given, and how cultivated, - - - - - - - - 30

To the person who shall make the experiment of turning in green crops as a Manure, on a tract not less than one acre, and prove its utility and cheapness over any other manure, giving a particular account of the process, and its result, - - 30

To the person who shall, by actual experiment, prove the best season and modes of laying down lands to grass, whether spring, summer, or fall seeding be preferable, and with or without grain on different soils, - - - - - - - - 30

To the person who shall raise the greatest quantity of dry pease, on an acre, not less than thirty bushels, - - - - - - - 20

To the person who shall raise the greatest quantity of dry beans, on an acre, - - - 20

To the person who shall give proof of having produced the largest quantity of dressed flax raised on an half acre, - - - - - - 20

To the person who shall take up in the season on his own farm the greatest quantity of good honey, and shall at the same time, exhibit evidence of superior skill in the management of bees - - $10

For the best cheese, not *less than* one year old, and not less in quantity than 100 pounds - - 10

For the next best do. do. - - - - - 5

For the best cheese *less* than one year old, - - 10

For the next best do. do. - - - - - 5

To the person who shall raise the greatest quantity of vegetables, grain, peas and beans excepted, for winter consumption of the stock on his own farm, and not for sale, having regard to the respective value of said vegetables as food, stating the expence of raising the same, and the best mode of preserving the same through the winter, - - 30

To the person who shall raise the greatest quantity of winter wheat on an acre, - - - - 30

To the person who shall raise the greatest quantity of spring wheat, on an acre, - - - 30

To the person who shall prove to the satisfaction of the Trustees that his mode of rearing, feeding and fattening neat cattle is the best, - - - 20

For the best Butter, not less than 50 lbs. - - 10

For the second best do. do. - - - - - 5

For the best Sole Leather, not less than five sides, - 10

For the second best do. do. - - - - - 5

For the best dressed Calves Skins, not less than twelve in number, - - - - - - 10

For the second best do. do. - - - - - 5

For the best five Barrels of superfine Flour, manufactured in the State of Massachusetts, from Wheat, raised in this state, - - - - - - 25

To entitle himself to either of the Premiums, under this head of Agricultural Experiments, the person claiming, must cultivate a tract of at least one acre in one piece, with

the plant or production for which he claims a premium; and must state, in writing, under oath of the owner, and of one other person, (accompanied by a certificate of the measurement of the land, by some sworn surveyor,) the following particulars:

1. The state and quality of the land, in the spring of 1820.
2. The product and general state of cultivation and quantity of manure, employed on it the year preceding.
3. The quantity of manure used the present year.
4. The quantity of seed used, and of Potatoes the sort.
5. The times and manner of sowing, weeding, and harvesting the crop, and the amount of the product ascertained, by actual measurement, after the whole produce, for which a premium is claimed, and the entire expense of cultivation.

And in relation to all Vegetables, except Potatoes, Onions and common Turnips, the fair average weight of at least twenty bushels must be attested; and if hay scales be in the town, in which raised, not less than three averaged cart loads must be weighed.

The claim under this head, together with evidences of the actual product, must be delivered, free of postage, to Benjamin Guild, Esq. Assistant Recording Secretary of this Society, on or before the first day of December next. The Trustees not intending to decide upon claims under the head of Agricultural Experiments, until their meeting in December.

FOR INVENTIONS.

To the person who shall invent the best, simplest, and least expensive Machine for Threshing Wheat, or any small Grains, mown as well as reaped - - $75

To the person who shall use the Drill Plough, or Machine, and apply it most successfully to the cultivation of any small Grains or Seeds, on a scale not less than one acre, - - - - - - 20

To the person who shall invent the best Machine, for pulverizing and grinding plaster to the fineness of twenty-five bushels per ton, and which shall require no more power than a pair of Oxen or a Horse, to turn out two tons per day, and so portable that it can be removed from one farm to another without inconvenience, - - - - - - - $30

To the person who shall produce, at the show, any other Agricultural Implement of his own invention, which shall, in the opinion of the Trustees, deserve a reward, - - - - - - - - 20

In all cases proof must be given of the work done by the Machine, before it is exhibited; and of its having been used and approved by some practical farmer.

FOR FOREST TREES.

For the best Plantation of White Oak Trees, not less than one acre, nor fewer than one thousand trees per acre, to be raised from the acorn, and which trees shall be in the best thriving state on the first of September, 1823, - - - - - $100

For the best plantations of White Ash, and of Larch Trees, each of not less than one acre, nor fewer than one thousand trees per acre, to be raised from the seeds, and which trees shall be in the best thriving state on the first of September, 1823, - 50

For the best Live Hedge, made of either the White or Cockspur Thorn, planted in 1820, not less than one hundred rods, and which shall be in the best state in 1823, - - - - - - - 50

FOR DOMESTIC MANUFACTURES.

To the person or corporation, who shall produce the best specimen of fine Broadcloth, not less than 1 5-8th yards wide, exclusive of the list, 40 yards in quantity, and dyed in the wool - - - - 30

For the second best do. do. do. - - - - $20
For the best superfine Cassimere, not less than 3-4 yards wide, nor less than 40 yards in quantity, - 15
For the second best do. do. do. - - - - 10
For the best superfine Sattinet, 3-4 yards wide, not less than 50 yards, - - - - - - 10
For the second best do. do. do. - - - - 6
To the person or corporation, who shall produce the best specimen of Cotton Cloth, manufactured in this State, not less than 50 pieces - - - 20
To the person who shall produce the best specimen of any other fabrics of cotton, manufactured in this State, in public factories, not less than 50 pieces - 20
In private families, not less than 5 pieces - - 20

FOR HOUSEHOLD MANUFACTURES.

For the best Woollen Cloth, 3-4 wide, not less than 20 yards in quantity - - - - - - $12
For the second best do. do. - - - - - 8
For the best double-milled Kersey, 3-4 yard wide, not less than 20 yards in quantity - - - 12
For the second best do. do. - - - - - 8
For the best Coating, 3-4 yard wide, and not less than 20 yards in quantity - - - - - - 8
For the second best do. do. - - - - - 6
For the best Flannel, 7-8 yard wide, not less than 45 yards in quantity - - - - - - 10
For the second best do. do. - - - - - 7
For the best do. 4-4 yard wide Carpeting, not less than 30 yards in quantity, - - - - - 15
For the second best do. do. - - - - - 7
For the best 5-8 yard wide Stair Carpeting, not less than 30 yards in quantity, - - - - - 10
For the second best do. do. - - - - - 7
For the best pair of Blankets, not less than 8-4 wide and 10-4 long, - - - - - - - 6
For the second best do. do. - - - - - 4

For the best Woollen Knit Hose, not less than 12 pair in number, - - - - - - $5
For the second best do. do. - - - - - 3
For the best Worsted Hose, not less than 12 pair in number, - - - - - - - - 5
For the second best do. do. - - - - - 3
For the best Men's Half Hose, (woollen) not less than 12 pair in number - - - - - - 4
For the second best do. do. - - - - - 2
For the best Men's Woollen Gloves, not less than 12 pair in number, - - - - - - 5
For the second best do. do. - - - - - 3
For the best Linen Diaper, 5-8 yard wide, and not less than 30 yards in quantity, - - - - 5
For the second best do. do. - - - - - 3
For the best 4-4 yard Diaper, (for table linen) not less than 30 yards in quantity, - - - - 10
For the second best do. do. - - - - - 5
For the best specimen of Sewing Silk, raised and spun in this state, of good fast colours, not less than one pound, - - - - - - - - 5
For the second best do. do. - - - - - 3
For the best Linen Cloth, (for shirting or sheeting) one yard wide, and 25 yards long, - - - 8
For the second best do. do. - - - - - 4

All the above Manufactures, except when of Cotton, must be of the growth and manufacture of the State of Massachusetts. And all Manufactures, when presented, must have a private mark, and any public or known mark must be completely concealed, so as not to be seen, or known by the Committee, nor must the Proprietors be present when they are examined; in default of either of which requisitions, the articles will not be deemed entitled to consideration or premium.

Animals, Manufactures, or Articles, may be offered for Premium at Brighton, notwithstanding they may have received a premium from a County Agricultural Society.

It is understood, that whenever, merely from a want of competition, any of the claimants might be considered entitled to the Premium, under a literal construction, yet if, in the opinion of the Judges, the object so offered is not deserving of any reward, the Judges shall have a right to reject such claims. Persons to whom Premiums shall be awarded, may, at their option, have an article of Plate, with suitable inscriptions, in lieu of money. Premiums will be paid within ten days after they shall be awarded.

That in any case in which a pecuniary premium is offered the Trustees may, having regard to the circumstances of the competitor, award either one of the society's gold or silver medals in lieu of the pecuniary premium annexed to the several articles.

That if any competitor for any of the society's premiums shall be discovered to have used any disingenuous measures by which the objects of the society have been defeated, such person shall not only forfeit the premium which may have been awarded to him, but rendered incapable of being ever after a competitor for any of the society's premiums.

All premiums not demanded within six months after they shall have been awarded, shall be deemed as having been generously given to aid the funds of the Society.

The Trustees of the Massachusetts Society for promoting Agriculture, hereby give notice, that they intend, on the second day of the Cattle Show, viz.: on the 11th day of October next, to give Premiums to the Owners and Ploughmen of the three Ploughs, which shall be adjudged, by a competent Committee, to have performed the *best work, with least expense of labour*, not exceeding half an acre to each Plough, and of such depth as the Committee shall direct. The team used, to be always such as is ordinarily used on his farm, for breaking up land, by the competitor, and to be an ox team.

First Plough, . .	$20	Second Plough, .	$12
Ploughman . . .	10	Ploughman . . .	6
Driver, ...	5	Driver, ...	3

Third Plough	$8
Ploughman	4
Driver	2

In each case, if there be no Driver, both sums to be awarded to the Ploughman.

The persons engaging in the Ploughing Match, must own their respective Ploughs and Cattle; and the Ploughman, (if he be not the owner,) must be a man employed on the owner's farm.

The persons intending to contend for these Prizes, must give notice, in writing, to S. W. POMEROY, or GORHAM PARSONS, Esquires, of *Brighton*, on or before the third day of October, so that proper arrangements may be made for the purpose. No person will, on any consideration, be admitted without such notice. The competitors will also be considered as agreeing to follow such rules and regulations as may be adopted by the Committee, on the subject. The Ploughs to be ready to start at 9 o'clock, A. M.

The result of the last Ploughing Matches at Brighton, and the satisfaction expressed by so many of their agricultural brethren, will induce the Society to continue these Premiums annually, in connexion with the Cattle Show; as an efficacious means for exciting emulation and improvement in the use and construction of the *most important instrument* of Agriculture.

Persons intending to offer any species of Stock for Premium, are requested to give notice thereof, either by letter, (post paid) stating the Article, or to make personal application to Mr. JONATHAN WINSHIP, at *Brighton*, on or before the 9th day of October, and requesting him to enter such notice or application; so that tickets may be ready at nine o'clock on the 10th. No person will be considered as a competitor who shall not have given such notice, or made such application for entry, on or before the time above specified.

All articles of manufactures must be entered and deposited in the Society's rooms on Monday the 8th of October

and will be examined by the Committee on Tuesday the 9th, the day before the Cattle Show, and no person but the Trustees shall be admitted to examine them before the show. The articles so exhibited must be left till after the show, for the satisfaction of the public.

The applicants will be held to a rigid compliance with this rule relative to entries, as well as to the other rules prescribed.

The examination of every species of Stock, (except Working Oxen,) ~~and of Domestic and Household Manufactures,~~ will take place on the 10th; and the trial of Working Oxen, examination of Inventions, and Ploughing Match, on the 11th of October.

The Trustees also propose to appropriate, on the second day of the Cattle Show, their Pens for the public sale of any Animals, that have been offered for Premiums, and also of any others, that are considered by them, as possessing fine qualities; and their Halls for the public sale of Manufactures. Both sales to take place at half-past eleven o'clock, precisely. And for all Animals or Manufactures, that are intended to be sold, notice must be given to the Secretary, before ten o'clock of the eleventh. Auctioneers will be provided by the Trustees.

By order of the Trustees,

JOSIAH QUINCY,

Chairman of the Committee of Premiums.

January, 1821.

AGRICULTURAL INTELLIGENCE.

The Hon. Mr. Quincy's remarks on soiling cattle have been suspended, owing to that gentleman's engagements in the Convention for the revision of the Constitution of Massachusetts, and to his occupations, which immediately succeeded in consequence of his election to the office of Speaker of the House of Representatives of Massachusetts. They will be resumed in our next number.

The continuation of the *review* of a treatise on agriculture, published at Albany, (a treatise since understood to be written by General Armstrong, late Minister of the United States to France) and also of the review of Mr. Hayward's work on horticulture, is postponed to our next number, in consequence of the necessary insertion of Mr. Sullivan's address, and of the proceedings at the Cattle Show and agricultural experiments offered for premium.

It is believed, that the successful efforts made by our farmers this year, together with the description of the methods employed to bring about such results, will be of more practical utility than any speculations, or remarks upon theoretical essays. Such instances of successful cultivation as we have now the opportunity of recording, will produce more conviction, and more powerfully excite our farmers and cultivators, than any reasoning or arguments which we could urge.

It will be seen, that we have nearly attained in every branch of culture, in single cases, the highest point to which the most celebrated cultivators of Great-Britain have arrived.*

We may now safely appeal to the agricultural gentlemen of the Southern States, and ask whether our soil and climate, hitherto held by them in great contempt, compared to their own fertile soil and more genial temperature, are not capable, with the aid of science and exertion, of equalling theirs in point of profitable production. Let them put the produce of an acre of Upland Cotton, which in most favorable years will produce not more than 300 lbs. valued at 15 cents per lb., or 45 dollars, against 110 bushels of Indian Corn, worth with us, (at 75 cents per bushel,) 82 dollars 50 cents, and the cost of raising, which is estimated by one cultivator at 9 dollars 50 cents, or if you please to double it, 19 dollars.—Is *their* cultivation cheaper? The same question may be applied to crops of potatoes, at 500 bushels per acre, worth 20 cents per bushel,—and to crops of 800 bushels of carrots, worth the same price per bushel.

We are persuaded that the premiums and the efforts of the various agricultural societies in our State, will, in a few years, greatly increase all our agricultural products, without enhancing the expense of cultivation, in a correspondent degree.

We are pleased to learn, that the Cattle Shows of Essex, Worcester, Middlesex, Hampshire and Berkshire, have this

* We would not be guilty of the extravagance of praise too common with us by intimating that our general state of improvement corresponds with the examples offered for premium. They only show the advantage of great attention and improved culture.

year afforded abundant evidence of the zeal of our cultivators and the improvement of our agriculture in all its branches. May they persevere successfully, without the smallest tincture of envy towards each other, but with as much emulation as possible. May their intercourse be perfectly free; but above all, may they all consider that to do the greatest possible good, it is not sufficient that they should make successful experiments, but that they should make them *known*, and our central publication offers them a convenient mode of disseminating the important truths which their experiments may have brought to light.

Donations to the Massachusetts Agricultural Society.

It gives us great pleasure to notice the several donations received by the Society within the past year. They are continually increasing, and demonstratively prove the great desire of improvement which prevails throughout our State. There is scarcely a citizen of intelligence of this State who is abroad, or placed in circumstances favourable to the acquisition of seeds or plants, which he thinks may be important, who remains forgetful of the interests of his native State. Many of the plants or seeds prove not to be adapted to our soil and climate—but this furnishes no reason for neglecting to send them. If one in a thousand shall prove useful, who can calculate its future value? If Sir Walter Raleigh, or whoever else was the introducer of the potatoe into Europe, had contented himself with saying, "This plant is very good in its native regions but cannot flourish in Europe," what would not the world have lost?

April 1st, 1820, Col. Dabney, of Fayal, presented to the Society some onion seed, of approved quality.

On the same day, Israel Thorndike, Jr. Esq. some grass seeds, fiorina and lupinella, from Italy.

May 13, 1820, Hon. John Welles presented a variety of garden seeds from France.

On the same day Mr. John Mackay presented to the society a churn of a new construction.

June 10, Edward A. Newton, Esq. presented some seeds and bulbs for the use of the Botanic Garden, imported by him from the Cape of Good Hope.

Paunkinqua, a Chinese merchant of great distinction, presented to the Society two chests of tea.

Sept. 9, 1820. Captain Thomas Clements presented to the Society a barrel of lupinella seeds (the sainfoin) and also melon, onion, and cauliflower seeds, all from Italy.

Jan. 23d, 1821. Gen. John Coffin, of St. John, New-Brunswick, formerly of Massachusetts, presented to the

Trustees a fine formed beautiful and powerful stud horse. of the light cart breed, imported by him from England—an animal admirably adapted to increase the bone and strength of our native breed of horses.

The Trustees expressed to General Coffin their grateful sense of his valuable donation, and of the motives which induced him to present the animal to the Agricultural Society of his native State. They engaged to take the greatest possible care of it, and to endeavour to carry into effect as far as possible the objects proposed by the donor.

They voted to him the Society's gold medal, and elected him an honorary member of the society for life.

The following analysis of Indian Corn, by Dr. Gorham,* is (so far as we know) entirely new, and it would have been highly grateful to us, if it could have appeared first in our Journal, to which it seems to be more appropriate, than to the Medical work, in which it was first published. We should have inserted Dr. Gorham's experiments at large, if we had room for them, and we hope to be able to do it in a future number, if his consent, and that of the editors of the New-England Journal of Medicine and Surgery, can be obtained.

According to Dr. Gorham's analysis of Indian Corn it contains the following constituent parts. The Zeïne to which he refers, and of which he found 3 parts in 100, is in his view a substance, which "differs from all the known proximate principles of vegetables," and may be at present considered as peculiar to this plant. We refrain from saying more, till we can do him full justice by inserting his experiments at large.

	Common State.		Dry.
Water,	9·00	-	0·000
Farina, or Starch,	77·00	-	84·599
Zeïne,	3·00	-	3·296
Albumen	2·50	-	2·747
Gummy matter	1·75	-	1·922
Saccharine matter	1·45	-	1·593
Extractive matter	0·80	-	0·879
Cuticle and Ligneous fibre	3·00	-	3·296
	98.50		
Phosphate, Carbonate, and probably Sulphate of Lime, and Loss.	1.50	-	1.648
	100.00	-	99.976

* Professor of Chemistry in the University at Cambridge.—It is a source of great pleasure to us to find the Professors of that seminary applying their learning to great public and practical uses.—It would seem that Indian Corn nearly approaches wheat in its value as food for animals.

END OF NO. III. VOL. VI.

COURT-STREET, BOSTON;
FEBRUARY, 1821.

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LATELY PUBLISHED BY WELLS AND LILLY.

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